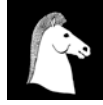




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Jan van Riebeeck as Pioneering Explorer and Conservator of Natural Resources at the Cape of Good Hope (1652–62)

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ABSTRACT

The first decade of Dutch VOC occupation of South Africa's Cape of Good Hope has been ill served by environmental historians. An examination of the daily journals covering the first decade of settlement proves fruitful for historians interested in the origins of European exploration, exploitation and conservation of natural resources at the Cape. This settlement is moreover a unique example of seventeenth-century Dutch settlers establishing a cornucopia of food plants in the absence of indigenous agriculturalists, experimenting with species imported from the VOC's many bases. The difficulty of establishing what they may have learned from the indigenous peoples is addressed.

KEYWORDS

VOC, Cape of Good Hope, natural history, conservation, agriculture, Khoikhoi

The period of Dutch occupation of the Cape of Good Hope in what is now South Africa, and the first decade in particular, has been ill served by historians of natural history and conservation. Descartes made the (somewhat outrageous) claim that he moved to the Netherlands because it was a boring (and safe) country of businessmen. Similarly it is easy to view the first Dutch East India Company (VOC) commander and settler Jan van Riebeeck and his colleagues at the Cape as workmanlike company functionaries who characteristically managed to overlook the incredible floral diversity of the region. In this view they were blinkered by their narrow focus on growing greens to supply VOC ships. It is not obvious that they learned much from the indigenous inhabitants. Their experiments with new crops and observations of indigenous flora and fauna have not been granted scientific status, and their attempts at conservation measures dismissed as ineffective. In this essay I hope to establish that the situation was more complicated, and interesting, than such views might suggest.

It is perhaps easy to commit the anachronism of locating the origins in South Africa of botany, conservation and natural history, as we define them now, in the work of the likes of Sparrman, Thunberg and Masson in the 1770s. They were informed by Linnaean taxonomies and gave many plants the scientific names we still use. It should however give us pause that, for example, the species *Aloe dichotoma* (quiver tree) that Francis Masson named in the 1770s had already been carefully observed, painted and described nearly a century before. This was on the 1685 expedition into Namaqualand organised by VOC commander and avid natural historian Simon van der Stel, nephew of the VOC director Joan Huydecoper van Maarsseveen, who was a founder of the Hortus Botanicus in Amsterdam (founded in 1682). Compare work done in Van der Stel's time with work done in Van Riebeeck's, less than 30 years earlier, in the light of contemporary notions about scientific method and environmentalism (the latter a much more recent concept), and it is easy to dismiss Van Riebeeck's contribution as slight and ineffectual.

In locating the origins of global environmental conservation in the activities of early colonial scientists, Richard Grove takes c.1676 as the point of origin of interesting developments at the Cape of Good Hope, selecting the tour of inspection of Hendrik Adriaan van Reede tot Drakenstein (of whom more below) in 1685 as his 'decisive event in the emergence of a strong and centralised Dutch conservation policy at the Cape'.¹ William Beinart's *The Rise of Conservation in South Africa* focuses on the period 1770–1950.² Even for those who have focused on this theme in South African history, the efforts of the Dutch in the first years, while duly noted, have been deemed of relatively little consequence.

There is a tradition in the history of science that distinguishes between 'disinterested' science, and market-driven initiatives – for example, in the introduction to a modern edition of illustrations from an expedition Simon van der Stel undertook in 1685, we read that the contents prove that: 'the early settlers were interested in more than merely exploiting the marketable resources of the

country'.³ In his account of early conservation and natural history at the Cape, Grove writes that in 1656 the Company Garden was 'still essentially a provision garden', and for Victor de Kock, Van Riebeeck's '[mere] ... vegetable garden' was transformed by Van der Stel into the 'incomparable garden of the Dutch East India Company'.⁴

I wish to respond to such dismissive statements with the contention that, as Harold Cook has argued, this was precisely the era in which modern science was born out of commercial imperatives arising from emerging global markets. The 'voyages of discovery' as they have come to be known, were trading ventures. Further, there is nothing insignificant about Van Riebeeck's achievement in introducing a cornucopia of vegetables, crops, fruit and nut trees and species of livestock into this novel environment – many of which have become staple foods and important commercial crops in the region.

In fact, Van Riebeeck is particularly interesting as he was forced to undertake a unique experiment in the VOC's history. The other permanent Dutch settlements had been set up alongside well-established indigenous ones nourished by their own long-standing agricultural, horticultural and pharmaceutical traditions. Van Riebeeck, however, faced the daunting task of establishing European and more recently acquired exotic food plants and livestock in a totally new environment inhabited only by nomadic pastoralists and hunter gatherers, about whom little was known.⁵ As the decade's worth of daily journal entries covering his period of command at the Cape (1652–62) show, this remarkable man and his colleagues set about this task with an approach which I will argue is consistent with an important strand of natural historical research prevalent at the time. In the process they accumulated a body of knowledge which formed the foundation for the development of European agriculture, horticulture, viticulture, animal husbandry, natural resource conservation and natural history at the Cape.

The *Dagregister* (daily *Journal*) kept by the VOC administration at the Cape is a significant source for environmental historians of this early period of European settlement, in particular the records of the first decade of settlement. The Thom edition published in three volumes as *Journal of Jan van Riebeeck* (henceforth *Journal*) amounts to 1,283 pages of entries (excluding all editorial matter), translated from 2,400 pages of manuscript in the Cape Archives (checked against other surviving manuscripts).⁶

I will also argue that Van Riebeeck and his fellow VOC employees' foundational discoveries and recommendations, including those learned from the indigenous peoples, were passed on to subsequent Dutch and later British colonists and settlers by means of the tradition of Cape gardeners' almanacs initiated by Van Riebeeck. We know that he compiled a *Caepse Hoveniers Almanach* (*Cape Gardener's Almanac*) for his successor, Zacharias Wagenaer. The original almanac has not survived, but was copied and added to by subsequent generations of gardeners and clerks of the Council of Policy at the Cape, appearing in many guises and under various titles throughout the eighteenth century. Sec-

tions appeared verbatim in the *Cape Almanacs* of the period of British rule, and from 1831 a notably extended form appeared as a compilation attributed to the Cape botanist James Bowie. The version I analyse here, the *Almanach der Africaansche Hoveniers en Landbouwers (African Gardeners' and Farmers' Almanac*, henceforth *Almanac*), dates from c.1708–11.⁷

CONTEXT

1. The Study of Nature in the Dutch Republic

At a time of religious schism, war and chaos in Europe, the Dutch had attained a measure of religious tolerance and (regulated) freedom of expression which, in combination with their pragmatic focuses on technological innovation, anatomical medicine, interested investigation of the natural resources of the globe, and curiosity in the exotica their traders brought back from distant regions, contributed to a flowering of the sciences. This was supported and financed by a regent class grown wealthy on the rich trades and land reclamation.

In the 1630s Descartes and Beeckman developed their mechanistic world view, published in muted form (after the condemnation of Galileo) in Descartes' *Discours de la méthode* in 1637.⁸ The defenders of Cartesianism held that Descartes had separated theology from philosophy, in effect freeing science and philosophy from religious strictures and scriptural literalism. Natural history – pursued primarily through careful observation, experiment and assiduous collection of specimens rather than speculation – was seen to provide a means of exploring the world through the new sciences in a way that was not overtly religiously controversial. The task involved a Baconian empiricism of the sort defended thus by Sir Hans Sloane (1660–1753) in his account of a journey to the West Indies:

It may be ask'd me to what Purposes serve such Accounts, I answer, that the Knowledge of *Natural-History*, being Observations of Matters of fact, is more certain than most Others, and in my slender Opinion, less subject to Mistake than *Reasonings*, Hypotheses, and *Deductions* are ... These are things we are sure of, so far as our Senses are not fallible; and which, in probability, have been ever since the Creation, and will remain to the End of the World, in the same Condition we now find them.⁹

It is not hard to see the appeal of this kind of approach in the Dutch Republic at the time. As Harold Cook puts it, 'for the hardheaded merchant and other men trying to plan to their advantage, the foundation of true knowledge lay not in debating general premises or conclusions but in accumulating precise and accurate information'.¹⁰

However, as Phillip Sloan argues, another version of natural history was being developed in the seventeenth century, one that we would more easily identify

with our modern notions of ‘science’, which under the influence of thinkers like Descartes ‘sought a causal understanding of natural objects in terms of historical genesis’.¹¹ Does Sloan’s definition of a Cartesian scientific natural history render Hans Sloane’s approach ‘an aid to knowledge rather than true knowledge itself’, as Cook phrases it? Surely Cook is correct to question ‘whether a clear and firm boundary between natural history and natural philosophy can be drawn along Sloan’s lines,’ as inevitably ‘theory and description influence one another profoundly’.¹² It is surely equally mistaken to try to split off practical from theoretical disciplines, horticulture, say, from botany.

As Schiebinger and Swan argue in their introduction to a stimulating collection of essays on colonial botany, it is time to revisit the accepted narrative in the history of early modern botany that describes its development as coincident with the rise of standardised nomenclature, taxonomy and abstract systems of classification. Certainly the late seventeenth and eighteenth centuries saw the systematisation of many fields, but to study what we now recognise as the discipline of botany (or any other discipline) in isolation from ‘the dynamic relationships among plants, peoples, states and economies in this period’ would be a mistake.¹³

Jan van Riebeeck (c.1618–77) did not get a standard Dutch university education of the time, where the focus was still predominantly on acquiring and imparting knowledge through the exercise of abstract reason. Rather, his medical training (by apprenticeship) equipped him with the kind of experiential knowledge and skills of observation that were becoming the preferred way of knowing of the Dutch mercantile golden age. The orphaned son of a ship’s captain, he joined the VOC and arrived in Batavia (now Jakarta) on Java in the East Indies in 1640, where he soon realised that his career prospects were better as a merchant than as a surgeon. He thus obtained a transfer and embarked – through travel, trade, and the organising discipline of administration – on the second part of his training. Jan’s education about his new world in the Indies was guided by the imperative to discover what was valued, by how much, how to judge the exchangeability of things, and the reliability of information. As Harold Cook puts it, at this time ‘[c]ountless people were involved in the production, accumulation, and exchange of the natural knowledge upon which commerce depended, and the high value they placed on accurate description of the created world – those “matters of fact” that would be true in any circumstance – became a measuring stick according to which they could judge other forms of knowing’.¹⁴

2. *Verenighde Oost-Indische Compagnie (VOC)*¹⁵

In the half century after its foundation in 1602, the Dutch East India Company (VOC) came to dominate trade in the East Indies. The Dutch colonial empire attained its zenith in the second half of the seventeenth century, with territories in South America, the Caribbean, Africa, India, Sri Lanka and much of what is

now Indonesia, and well established trading networks with China and Japan. By 1688 they had a total of some 11,500 employees in Asia and boasted more than 20 forts, with most of their troops concentrated in their capital, Batavia.¹⁶

The sea journey between Amsterdam and Batavia lasted five-and-a-half to seven months, and the Company's ships needed to stop to take on supplies and allow the sick to recuperate. It was routine for a significant portion of their crews to sicken, and even die, en route. Jan de Vries cites the appalling statistic that of the one million men the VOC sent to Asia in the 200 years of its existence, only a third survived to set foot on European soil again.¹⁷

From the 1590s the Dutch had taken to stopping in Table Bay at the Cape of Good Hope on the south-western corner of Africa to take on fresh water and try to barter livestock with the local Khoikhoi, before sailing east across the open Indian Ocean to Batavia. In 1648, the VOC ship *Nieuw-Haerlem* was wrecked in Table Bay and the men spent more than five months living off the land and what they could trade with the local peoples. These were the months of spring and early summer at the Cape, and when they were rescued by the return fleet of 1648, they took with them an exaggeratedly favourable impression of the Cape Peninsula as an exceptionally fertile and easy place to subsist, with a wonderful climate. Leendert Jansz. and Nicolaas Proot submitted a report to the Amsterdam chamber of the VOC in July 1649 wholeheartedly recommending that the Company establish a permanent settlement there, which the VOC resolved to do on 30 August, 1650.¹⁸ A well-travelled ex-employee of the Company eager to rehabilitate himself after a trade indiscretion in the East Indies, Jan van Riebeeck, was chosen to be the first commander. The VOC's instructions to Van Riebeeck and his officers were first to build a fort, and then take possession of sufficient fertile land to establish gardens and secure adequate pasture for cattle. They were to befriend the local peoples and on no account molest them or their livestock. They were to keep a lookout for any natural resources that could prove profitable and reduce the expenses of maintaining the settlement,¹⁹ and the Company's merchants and ships' captains were instructed to collect specimens of potentially useful or valuable exotic plants and drop them off at the Cape.²⁰

They were also instructed to keep a daily journal. From December 1621, the VOC had insisted that a *Daghregister* or daily journal be kept at all of its stations, thus facilitating the emergence of a global network of plainly written, factually-oriented, testable information on valuable natural resources – and the best means of acquiring or producing them. The rich trade was in 'green gold', predominantly spices, but also medicinal and food plants. Harold Cook argues that natural history and medicine, the big sciences of the seventeenth century, did not arise from the 'disinterested nature of scientific knowledge', as historians of science including Steven Shapin and Lorraine Daston have argued, but rather from the operations of merchants and their exchanges during the period of the emergence of a global economy. This is certainly true of the approach to understanding and reshaping the environment that characterised the period

of Van Riebeeck's command of the Cape. (Later, during Simon van der Stel's command, the natural historian and artist Hendrik Claudius would be dismissed for sharing information with the French Jesuit Guy Tachard – sharing knowledge was fine, provided it was kept within the Company.²¹)

It is notable that the only official 'expert' sent out with Van Riebeeck was Hendrick Boom, a gardener. The commander's later pleas to the Lords Seventeen to persuade Chinese gardeners to settle at the Cape were not answered (none, it seems, were tempted).²² Fortunately it was later discovered that Boom's wife, who became known as 'Annetje de Boerin' (Ann the Farmer') at the Cape, 'had been engaged in farm work in the Fatherland' and had some experience with livestock.²³ Thus, Van Riebeeck had to rely on serendipity and keeping an eye open for talent to find his specialists. Master gardener (from September 1658) Jan Bundervoet of Ghent, had arrived at the Cape a soldier, found employment in the Company's gardens, and proved himself knowledgeable in 'gardening, tree-planting, grafting etc.'²⁴ Similarly, Jacob Huijbrechtssen van Roosendael, appointed head gardener in March 1661, had come out to the Cape as a cadet.²⁵

3. *Indigenous Peoples at the Cape*

When Van Riebeeck arrived in 1652, there were clans of Khoikhoi pastoralists making use of the peninsula for seasonal grazing, *Strandlopers* (beach walkers, also called Goringhaikonas in the *Journal*) who lived off gathering and scavenging along the coastline, and small bands of hunter gatherers inland and further north.²⁶ The Khoikhoi had acquired livestock but not agriculture, and had been pushed out of the eastern areas of what is now South Africa as far south as the Fish River by the superior numbers of the advancing Bantu farmers. The climate south and west of the Fish is unsuitable for tropical African crops. It was a stroke of good fortune for the Dutch that they arrived with what Jared Diamond calls a 'Fertile Crescent crop package' suited to the Mediterranean climate of the Western Cape. Nevertheless, they had much to learn to adapt European, and a broad spectrum of American, tropical African and Asian, plants to the new weather patterns and environment of the Cape.²⁷

For the first few years of settlement relations between the settlers and the local peoples were relatively cordial, as the Lords Seventeen had ordered Van Riebeeck to treat the latter with respect, and furthermore the Khoikhoi traded livestock with the settlers. They always traded less than the Company needed, however, preferred to trade sheep rather than cattle, and were reluctant to trade fecund stock. The commander was obliged to put up with this, and constantly seek new trading partners. However, once the Dutch had managed to establish their own herd, and in 1657 granted nine soldiers the right to set up as independent farmers ('free burghers') on land the peninsular Khoikhoi were accustomed to utilising for grazing and watering their herds, conflict was inevitable.

In their interactions with the peoples they encountered at the Cape, the Dutch observed that they had an intimate knowledge of the local environment, making use of its natural resources for shelter, clothing, food, and materials for hunting technologies, and medications. What the Dutch learned from them is more difficult to establish. This is an endeavour complicated by the tendency of European explorers and natural historians to record only what they judged to be useful observations, and absorb these into their own systems of classification, stripping away the theoretical, religious and other associations of the indigenous persons from whom they had acquired the information. Harold Cook writes that Dutch writers working in the Indies, such as Jacobus Bontius (1592–1631) and Andries Cleyer (1630s–1698), ‘share the quality of conveying matters of fact as if newly discovered, although careful examination reveals that their accounts were written on top of erasures, as in a palimpsest’. What they represented as objective facts gained through personal experience were more often gained through contact and communication with local peoples.²⁸ In this paper I will suggest examples of this process from the *Journal* and the *Almanac*.

VAN RIEBEECK’S COMMAND AT THE CAPE²⁹

Van Riebeeck landed on 7 April, 1652, with the title of Merchant and Commander and the role of founder of the first permanent European settlement at the Cape. He was 35, and brought with him his wife Maria, their infant son, and two nieces. To give some idea of the scale of his task, in the latter half of the seventeenth century around 33 Dutch ships stopped over in Table Bay per year.³⁰ Outward bound fleets left the Netherlands in September, at Christmas, and at Easter, and return fleets left Batavia at the end of the year, and then a month or two later.³¹ This meant that Van Riebeeck and his team would be required to provision fleets with a range of fresh produce from February to April, and in June/July.

Unlike other colonial settlements, the Dutch settlement at the Cape was not intended primarily to be a centre for trade, for military control or for the cultivation of plantations of a few cash crops. It was established with the primary aim of establishing and cultivating a range of European and other exotic fruit and vegetables, and livestock, all this in a completely new environment on the other side of the world. A widely travelled man (he had travelled to the East and West Indies, Japan and Greenland), Van Riebeeck set out to discover what range of the many species of cereals, fruit, vegetables and livestock available to him from the VOC’s stations in Europe, Africa, Atlantic and Indian Ocean islands, India and the West and East Indies he could establish on this distant and uncultivated shore.

While he may have lacked the time or inclination for a disinterested curiosity in the new environment he was settling, Van Riebeeck certainly demonstrated a merchant’s keen interest in the Cape’s natural resources and indigenous fauna

and flora – insofar as they were useful to the aims of settlement, or were potentially commercially valuable. In this respect he enjoyed the advantage of a fairly well developed literature on the coastal parts of the region, compiled from the accounts of passing travellers. For instance, Jodocus Hondius published his *Klare Besgryving van Cabo de Bona Esperança (A Clear Description of the Cape of Good Hope)* in Amsterdam in 1652. Of course a fair amount of the information was misleading, and it was particularly unhelpful on the indigenous peoples of the region, of whom the early Dutch travellers seem to have had a singularly low opinion.³²

The Dutch settlers could not take the familiar European turn of the seasons and the received wisdom of farming in the Republic for granted, and so had to pay close attention to the daily changes in weather, longer-term climatic cycles, growing patterns and so forth, and work out the rhythms and seasons of their new world. Thus we find daily records of weather, phases of the moon, the experimental planting of crops in different positions and soils and at different times, and what befell them, in a decade's worth of daily journal entries.

First Impressions: the Lie of the Land

On landing, the Dutch busied themselves with building a fort, with a moat taking in water from a fresh water river. By Sunday 21 April the Dutch had cannons in place on their fort, and began to explore the area, investigating the kloof (valley) between Table Mountain and Lion's Head, where they were impressed by the 'beautiful, broad, fertile soil – as fine as one could find anywhere in the world'.³³ The *Journal* noted that several freshwater rivulets would water it in the rainy season (they were currently dry). Van Riebeeck deduced from the deepness of cattle footprints that the rather hard soil would be soft and suitable for cultivation in the rainy season.³⁴ At this early stage, the commander had extremely high hopes for the cultivation of the land around Table Mountain – he could not have known that the region's extraordinary diversity of plant life thrives on poor soils. He probably was also impressed, after growing up in the Republic, with the vastness of the apparently unclaimed land available for agriculture.

Introduced Vegetables, Cereals and Trees

The Dutch planted an impressive variety of vegetables, herbs and crops, from many parts of the world, in a variety of soils and positions, experimenting to discover what grew best, in what conditions, and at what time of year. They faced considerable adversity in their first months, including the gale-force winds, hail and flooding of the Cape winter in June, July and August.³⁵ Nothing daunted, the *Journal* notes that 'we intend planting more and experimenting throughout the year with a little of all the crops in different months in order ultimately to gain experience of the best season for each'.³⁶ They built embankments and dug

drains around their gardens, planted hedges as windbreaks, and used manure from livestock, enjoying the most success at first with tubers and low-growing vegetables such as radishes, carrots, cabbages, beetroot, lettuce, potherbs and chervil.³⁷ Anything higher, like beans and peas, wheat and barley, was flattened by fierce westerly winds in June/July (weather in which, the *Journal* declared, 'one would hardly chase a dog outside'), and the southeaster in October.³⁸ Turnips, which had come up well, had been destroyed by what the *Journal* writer describes as '*haer wortel*' ('hair root').³⁹ The gardens would also suffer significant damage from locusts in February 1653.⁴⁰

In January 1653, the Company gardeners planted pumpkin, melon and watermelon from Pernambuco in Brazil (in Dutch hands from 1630–61),⁴¹ and we are told that melons prospered once there was (cow dung) manure for them.⁴² (The Dutch collected manure from the kraals of the Khoikhoi when they broke camp and moved on, and when the Kaapmans (Goringhaiquas) realised this in 1656, they took to burning it all.⁴³) Sweet potatoes (*Ipomoea batatas*) from Brazil were planted in 1653, though a *Journal* entry for 11 October 1656 notes that they had not thrived.⁴⁴ Typically, however, Van Riebeeck persisted doggedly. The Commander felt that sweet potatoes were 'a nutritious vegetable,' and by October of 1658 he was riding about ensuring that the free burghers were preparing to plant them, as the Company gardeners had enjoyed success with them in the Company gardens.⁴⁵ It was often Van Riebeeck himself who persisted with the cultivation of seemingly difficult trees and crops, either on his private estate at Bosheuvel (granted him in 1658, partly in compensation for making him stay on at the Cape, and perhaps to give him a vested interest in farming and gardening), or by insisting on this in the Company gardens. He was driven to do this because the free burghers were:

chiefly occupied with grain farming and vegetable gardening, so that they may raise the quickest growing produce and have speedy returns. That is why they plant so few trees on their own land and so few sweet potatoes, although they are continuously reminded of the excellence and usefulness of this tuber.⁴⁶

Innovatively, in August 1659 Van Riebeeck decided to plant a strip of sweet potatoes '2 roods wide outside his grain-fields and vineyard' to:

protect the ripe corn from fire, which is very common in the dry season, when the Hottentots usually set fire to the dry herbage and grass everywhere. Without a crop of low growing vegetables or an open belt in between, it is very difficult to keep the fire from the ripe grain or to extinguish it.⁴⁷

Tobacco was planted in 1656, and grew well.⁴⁸ It was viewed as an important crop as it was used for bartering livestock with the Khoikhoi.

It was vital that the settlement establish its own supply of rice, maize or cereals, to end their reliance on imported bread and rice, but this proved more difficult than they had anticipated. Heavy winds and rain, hail and flooding all

took their toll, and rice failed utterly. Strong winds flattened the barley and wheat planted in the Table Valley on various occasions throughout the first year at the Cape, but when it was discovered that the winds were much reduced behind Table Mountain, rice, oats, wheat and barley were planted at Ronde Bosjen 'by way of an experiment' on 17 and 24 May 1656.⁴⁹ (There were now four Company gardens in existence, each in different situations and soils.) By October the experiment had been pronounced a success (with the exception of rice). On 11 December the reaping of the wheat was begun, and the ears were found to be completely undamaged by wind.⁵⁰

The Dutch learned that seed brought from Europe needed acclimatising, and in May 1658 the *Journal* noted that:

at first but a small yield is obtained from seed from Holland, but that seed won here at the Cape will be a success. This season will show whether the same applies to peas and beans. We accordingly fully realise that it will entail much work before we shall have a plentiful supply of grain.⁵¹

On 15 June it was reported that the Company's Cape wheat, Cape rye and Dutch barley were all growing well, but the Dutch wheat was not doing well, and the Dutch rye was a complete failure. This confirmed their conjecture that seed won at the Cape would provide more grain.⁵² They also claimed to have learned through experience that 'raw land which has been ploughed for the first time proves to be not as good as land which has been under cultivation for a longer period'.⁵³ (In an early example of soil conservation, the *Almanac* notes that 'when the land slopes, it is best to plough furrows obliquely for better drainage of ground- or rain-water, so that the furrows are not eroded too deeply by runoff after heavy rain, which will occur if they have been ploughed straight up and down...'.)⁵⁴

On 25 June 1658 we find the indefatigable commander urging the free burghers to 'plant a large quantity of maize or Turkish wheat, obtained from Guinea,' and threatening to close the provision depot when they proved reluctant.⁵⁵ (Maize would become a staple of the diet of many South African peoples.) Somewhat prematurely, in July 1658 the Company's horse mill was given to Wouter Cornelissen Mostaert (Mostert's [sic] Mill still stands today, restored to working order, not far from the University of Cape Town), to grind wheat, rye, malt and groats.⁵⁶ Only in December 1659 could it at last be written that '[g]rain-growing is at present so far advanced here, praise be to God, that we have enough to eat, and we have commenced to give the Company's garrison and labourers a monthly ration of 40 lbs. of freshly-baked bread...'.⁵⁷

Trees understandably took longer to establish than vegetables. By October 1656 we read of good progress made with the cherries, pears, plums, oaks and ash trees, as well as orange and lemon trees from St Helena and from India.⁵⁸ The precariousness and importance of this enterprise may be judged by the statement on 17 July 1657 that '[n]o one may destroy any fruit trees on pain of

losing his life and possessions.⁵⁹ On 4 September 1658 Jan Bundervoet was promoted to master gardener, because of his 'ability and knowledge of gardening, tree-planting, grafting, etc.'⁶⁰ On the first of November 1659 the cherry and medlar trees were in full bloom, as well as some of the lemon trees, and on 13 December the first ripe cherry was picked.⁶¹ In the *Journal* entry for 12 September 1660 we read that '[t]his week some Dutch apple, pear, quince and medlar trees were grafted on some young, wild trees in the forest and also in the Company's gardens. The same will be attempted with lemons and oranges, so that if it is successful we may accumulate a greater abundance of fruit.'⁶² The Company Gardens were the laboratories for these kinds of experiments in creating new varieties of useful European trees better suited to conditions at the Cape. The Dutch settlers appear to have enjoyed some success in this – in his *Beschryvinge van de Kaap der Goede Hoop* of 1726 François Valentijn reported that 'many trees brought from the fatherland will not thrive here, but grafted or inoculated, they forthwith grew more luxuriantly and prosperously than in Holland, where they usually have to wait till springtime'.⁶³

Vines

Once he felt he had the basic food growing more or less in place, Van Riebeeck endeavoured to convince the free burghers to plant vines on their lands, initially without success. He therefore decided to plant vines on his own land at Bosheuvel in August 1658, resolving to plant the young shoots 'during the waning moon, which is the correct time.'⁶⁴ On Sunday 2 February, 1659, it was written that '[t]oday, praise be to God, wine was made for the first time from Cape grapes, namely from the new must fresh from the vat.'⁶⁵ Despite the fact that the freemen were reluctant to grow vines as they were interested only in growing grain and vegetables, which provided quick returns, by September 1660 the free burghers were 'now beginning eagerly to plant the vine cuttings of which hundreds are given to them'. The advantage of vines, Van Riebeeck saw, was that they could be planted 'in the poorest soil', an important consideration on the Cape Peninsula.⁶⁶ He introduced vines from the Dutch Republic (probably originally from France or Germany), Brazil, St Helena, India, Spain, Italy and even Japan, and the *Almanac* contains detailed information on viticulture.⁶⁷ The Commander had managed to establish the foundations of an industry that has thrived through to the present day.

Livestock and Pasturage

Van Riebeeck concentrated his efforts on establishing herds of cattle and sheep through trade with the Khoikhoi, and it was once these became established by early 1657, that serious disagreements over pasture arose. The pressure on land created by the issues around pasturage was a recurring problem, but all

along the Dutch had experimented with ways of marking off their land with the use of environmental interventions. These ranged from Rijckloff van Goens' idea of constructing a canal between Table and False bays (discarded as impractical⁶⁸), through the clearing and deepening of the shallower parts of the Liesbeeck River,⁶⁹ to the erection of boundary fences.⁷⁰ In February 1660, after a period of sustained attacks by the Khoikhoi, Van Riebeeck decided to plant a boundary hedge of bitter almonds (now known as wild almonds, *Brabejum stellatifolium*) and thorns around the entire settlement.⁷¹ These almonds were to become a matter of further dispute when the group known as the Kaapmans lodged a complaint against the Dutch for appropriating their land, '[remaining] adamant in their claim of old-established natural ownership' and stating that at the very least they 'should be allowed to go and gather bitter almonds, which grow wild in abundance there, and to dig for roots as winter food'. However, the Commander felt this would allow them 'too many opportunities of doing harm ... and furthermore we shall need the almonds ourselves this year to plant the proposed protective hedge...'. The Kaapmans were brusquely informed that 'they had now lost the land as the result of the war'.⁷² Trees growing from the original rootstock of those wild almonds planted on Van Riebeeck's orders in 1660 still survive in two patches along the original boundary of the settlement, in the Cape Town suburb of Bishopscourt, and at Kirstenbosch National Botanical Garden.

In addition to acquiring their initial stocks of cattle and sheep from the Khoikhoi peoples, the Dutch appear to have learned something about pasturing livestock and veld management from them. On a visit to Robben Island in July 1655, the interpreter Harry (Autshumato) 'pointed out to us a large number of herbs from which, according to him, the cows would produce much milk and also thrive well'.⁷³ In February 1659, the Company yacht delivered various materials to Robben Island, including 'some seed of a kind of plant which grows in the open on sandy soil during the dry season and which, it has been found, the sheep eat very readily'.⁷⁴ We know from Kolb that the Khoikhoi had 'cow-doctors', and in a letter from Robben Island of September 1658, we learn that snake fat was rubbed on young rams after they had been castrated. (It was judged too thin, and butter was requested from the mainland).⁷⁵ No record is made of whether such information was learned from Khoikhoi pastoralists and independently verified – perhaps instances of the 'palimpsest' effect Cook refers to.

More significantly, the *Journal* repeatedly notes the Khoikhoi's use of controlled burning to renew pastures (when the grasses became too tall or dry to graze, they would set them alight and move on, returning after rain to the rejuvenated veld).⁷⁶ There is no *Journal* record of the Dutch doing this, and it is perhaps unlikely in the early years because of the limited space within the defensive perimeter of the settlement, and the danger to the flammable buildings and crops. As the free burghers began to extend the frontiers of settlement, however, this will have changed. Johan Vogel, who visited the Cape in 1679, noted that:

when [the grass] is too old and tough to be any more eaten by the beasts, it is set on fire by the inhabitants.... But in order that the fire may go no further than the inhabitants wish, they dig out a trench, at which the fire decreases and dies out when it reaches it.... The ashes of such burnt grass manure the land where the fire was, and make it so fertile that, when light rains fall, in a short time new or young grass grows up, into which the animals are driven to graze....⁷⁷

Early in the eighteenth century, Peter Kolb noted that the 'Hottentots' burned grass that was old and rank to renew the pasture, and was of the opinion that: '[i]n this the Hottentots are imitated by the Europeans at the Cape, with this difference only, that the Europeans make ditches round the grass they would burn, to stop the course of the fire, whereas the Hottentots give themselves no such trouble'.⁷⁸ Thus, while it is not clear from Vogel's account who was doing the burning, it seems from Kolb's account that Vogel was describing Dutch free burghers burning veld.

A series of placaaats (resolutions of council) forbidding unauthorised veld burning, including the threat of hanging for a second offence in 1687, suggests that it did go on throughout the latter half of the seventeenth century.⁷⁹ Further, burning the veld is recommended in the *Almanac*, which instructs that the correct times to burn are in the dry months from November – February, and at the latest in March.⁸⁰ This is a good example of European knowledge acquired from the local pastoralists, recorded without reference to where it was learned. More than 250 years later in 1912, the veterinarian Dr Arnold Theiler undertook a survey of farmers' views on stock disease, and noted that in the winter rainfall districts of the Western Cape, and parts of the Eastern Cape, farmers were still burning in the dry summer months (despite the disapproval of government experts).⁸¹

The Dutch experimented with cross breeding, discovering that the progeny of imported Dutch sheep (brought to the Cape by Rijckloff van Goens, Councillor Extraordinary of India, in 1657) and local fat-tailed sheep, had more offspring and gave more milk. Bengal sheep were imported from the East. The settlers also made use of tar to protect sheep against the disease they knew as 'scab', which they believed were caused by 'vermin' (ticks).⁸² In the placaaat of 20 August, 1658, it was noted that the Company owned more than 240 head of cattle and 600 sheep, and the Council resolved to supply cows in calf, in addition to draught oxen, to the free burghers to increase the supply of cattle available for supplying VOC ships calling at the Cape. Along with sheep, which they supplied for the purpose of cross breeding, these would also provide valuable manure. Each farmer would get 50 sheep on condition they kept at least one Dutch ram, and it was legislated that rams born of Cape sheep should be castrated to ensure that cross breeding took place.⁸³ The Dutch also farmed geese, fowls, ducks, turkeys (turkeys and geese did not thrive⁸⁴), and pigs (a failure).⁸⁵ Rabbits were successfully bred on Robben Island.⁸⁶

Indigenous Fauna and Flora

In the first years, the Dutch were plagued by attacks by wild animals on their livestock, with recorded attacks in December 1652 and throughout January 1653.⁸⁷ This was especially keenly felt when their precious horses were mauled, for instance on two occasions in June 1656. Shortly thereafter Van Riebeeck surprised a lion on the border of the Company gardens, moving him to offer rewards for the killing of predators (lions, leopards, tigers (probably leopards) and wolves (probably hyaenas), were listed).⁸⁸ Other vermin control measures included instructions for the extermination of snakes on Robben Island, where the Dutch were breeding livestock out of the reach of the Khoikhoi.⁸⁹

Various efforts were made to domesticate wild animals, without success. For example, the Dutch bought ostriches to see if they could be farmed, but no more is said about this in the *Journal* so one has to assume it was a failure at this stage.⁹⁰ (However, in 1658, 12 ostriches were sent east on the *West Vrieslandt* 'as presents for Indian potentates and in particular for the Emperor of Japan'.⁹¹) A steenbuck (or 'rheebuck') with young was sent to Robben Island to see if it would thrive (it didn't).⁹² The Dutch were very interested in the idea of capturing and domesticating wild horses (quaggas and zebra), but met with no success as they were too wild and too fast to catch alive.⁹³ Van Riebeeck kept an eye on the population of 'rock rabbits' (rock hyrax) on Robben Island, as these were good eating.⁹⁴ He considered the possibility of extracting civet from civet cats, but this came to nothing.⁹⁵

Some of the free burghers kept bees, but Kolb later noted that 'when I left the Cape, there were not half a score persons there, who kept bees...', because 'the Hottentots ... make it in a manner needless for the Cape-Europeans to keep bees', selling honey to Europeans 'for a little tobacco or brandy'.⁹⁶ The Dutch also obtained wax from the Khoikhoi.⁹⁷

In the early months at the Cape, the abundance of game is described, but somewhat wistfully as the birds and animals were too wild to shoot or catch. The *Journal* notes that '[p]erhaps, if one had implements and people with knowledge of making bird-cages, etc., one would be able to catch them,' but it doesn't seem to have occurred to the Dutch that they could learn precisely these skills from some of the indigenous peoples.⁹⁸ Later, they enjoyed success with their firearms, and hunting was regulated.⁹⁹ Extensive use was made of seals, for food, train-oil and pelts. They were harvested for their hides until this was forbidden by the Lords Seventeen in a letter of 12 October, 1656, due to poor prices and their terrible stench aboard ships.¹⁰⁰ The Dutch learned not to harass or kill seals during their breeding season, and the men were called off when their numbers declined on the islands, or they showed signs of becoming 'jaded'.¹⁰¹ Large quantities of wild birds (especially penguins) and their eggs (including one haul of 12,000) were regularly harvested.¹⁰² Plans to hunt whales for train-oil came to naught.¹⁰³ The Dutch always noted the presence of mussels and oysters

with interest, hoping to find pearls, which they did not, and they ate abalone.¹⁰⁴ They gathered shells for their lime kiln, which required much firewood.¹⁰⁵

From the beginning, the Dutch made use of indigenous plants for food and building materials. Within days of arriving at the Cape they were gathering bags of wild mustard leaves and sorrel.¹⁰⁶ It is hard to say what the ‘mustard’ was, but the sorrel was probably Cape, or Wood, Sorrel (*Oxalis pes-caprae*). The gardeners decided to transplant and cultivate wild asparagus in June 1652.¹⁰⁷ Mia Karstens notes that, as the *Journal* refers to the tasty inflorescence tips, this could not have been the indigenous Cape species *Asparagus capensis*, but may have been *Anthericum divaricatum*, Jacq., which has ‘thick and tender’ young inflorescences.¹⁰⁸ (It may also have been Wild Asparagus *Anthericum africanus* or ‘Hottentot’s cabbage’ *A. ciliatum*.¹⁰⁹) On October 10, 1652, a group of Goringhaiqua Khoikhoi were observed carrying ‘some ostrich eggs and leek or young onion and garlic, which we have also found here in fair abundance, growing wild, and of which we intend collecting seed in order to grow it at the fort, as we have already been doing with the asparagus, sorrel and mustard.’¹¹⁰ The ‘leek or young onion and garlic’ may have been Wild Garlic *Tulbaghia alliacea*.¹¹¹ In April 1654 van Riebeeck observed that ‘bitter almonds’ (*Brabejum stellatifolium*) were ‘commonly collected and eaten by the natives, who first of all peel them and after drying them in the sun for a few days, roast them on the fire. We also intend trying it at the first opportunity.’¹¹² The *Journal* writer grumbles in January 1653 that men were laid up with dysentery, ‘apparently caused by wild figs which grow here and are eaten by the natives’.¹¹³

Thus the Dutch did learn about some indigenous food plants, and how to prepare them, from the Khoikhoi peoples. This was not limited to the official, Company sphere – in a *Journal* entry in December 1661 it was noted that ‘the free burghers and private persons give [the Saldanhers] quantities of tobacco in exchange for milk, a certain kind of ground nut, roots, other wild fruits such as porrit,’ and other small items such as ostrich eggs and feathers.¹¹⁴ Clearly, local knowledge was being acquired, and some of this was passed on in the *Farmers’ and Gardeners’ Almanac*. For instance, it is noted in the entry for August that: ‘toward the end of the month Hottentot uinjies [onions] are ready for eating’, and that spekboom (Porkbush, *Portulacaria afra* Jacq.) should be doing well.¹¹⁵ September entries include notes on ‘African almonds’ and ‘African wild asparagus’.¹¹⁶

Van Riebeeck noted the Hamcumquars’ use of ‘the valuable herb *dacha*, which drugs their brains, just as opium, *ginje* [ginseng], strong tobacco, brandy and the like’. This plant (most likely Wild dagga, *Leonotis leonurus*, not cannabis, which was cultivated in the summer rainfall regions on the East coast of South Africa) is the only plant that the *Journal* mentions being cultivated by the Khoikhoi, and unusually, these cultivators apparently ‘never moved their huts and made a living by planting dagga’.¹¹⁷

The Dutch cut reeds for thatching.¹¹⁸ The constant risk of fire to the wooden, thatched buildings of the settlement was a problem in view of the Khoikhoi's predilection for burning the pasture, and fires started carelessly by settlers.¹¹⁹ Only in 1660 did the Dutch devise baked tiles and begin replacing all the thatched roofs of the Company's buildings.¹²⁰ In August 1656, while searching for suitable trees to provide a wind break around the gardens, van Riebeeck found 'a sort of pine, about 6 feet high,' and on September 2, he described these again, but 'they were of a variety which looked more like the juniper tree than the fir on account of their prickly leaves' (possibly *Cliffortia ruscifolia* or *Borbonia lanceolata*).¹²¹ The beautiful and fast growing *Keurboom* tree (both *Virgilia divaricata* and *V. orboides*) were grown for hedges and their valuable timber, and the *Almanac* includes advice on planting them (use saplings, not seed).¹²²

Plants not perceived to be of direct use were mentioned, but not described in any detail. For example, a *Journal* entry from September 1652 about Robben Island records 'all sorts of pretty, sweet-smelling herbs and flowers'.¹²³ Collecting or describing these for science was not a priority in these early years. While these early settlers are sometimes judged for ignoring the Cape's indigenous botanical splendour, it is well to remember that the Cape's famous 'Fynbos' has only become popularly known as a hotspot of floral biodiversity (a recent concept) since the Fynbos Biome Project of the 1970s–'80s. Further, in the early years of adversity, the Dutch showed aesthetic appreciation for domesticated landscapes and familiar, nourishing plants. On December 5, 1656, Van Riebeeck:

took with him on a wagon all the Dutch women of the Cape in order to provide them with a little pleasure. With them he drove a good distance inland and also in to the forest, in particular to allow them the pleasure of seeing the growing grain, tobacco, Turkish and other beans, which at the Ronde Doorn Bosjen grow as well as they do in the Fatherland.¹²⁴

Forests and Timber

From the first, Van Riebeeck was preoccupied with finding accessible forests to supply timber for the settlement. While they quickly found forests with suitable trees behind Table Mountain, they were judged too distant and difficult to transport timber from.¹²⁵ In September, the shortage of timber was growing critical, and Van Riebeeck reinvestigated, finding many large, upright trees suitable for their purposes only a mile-and-a-half from the fort, high up the slopes of Table Mountain (probably including yellowwood (*Podocarpus latifoliosus*) and Cape laurel (*Ocotea bullata*) trees). As they didn't know what species these were, instead of trying to describe them botanically, they compared them to trees they knew; 'of a kind almost like beech and ash'.¹²⁶ The Dutch named new plants of interest to them according to what they most closely resembled among the plants already known to them. Another example is the use of the Dutch form

(*nijp*) of a Malay name, *nirpah* to describe an aquatic plant in the Liesbeeck River.¹²⁷ They compared the roots eaten by the Watermen to ‘the Japanese *nisi* root’, but noted that ‘we found it had a formal resemblance but a totally different flavour’. This was a shame, as Van Riebeeck knew that ‘the *nisi* is in great demand in Batavia, Tajouan, Toncquin and Quinam...’.¹²⁸

In October 1657, the free carpenter Leendert Cornelis was granted ownership of a forest and the sole right to obtain timber from it ‘in such a way that the forest would suffer no damage but would be improved – the timber to be used for suitable purposes’.¹²⁹ In November Roeloff Zieuwertssen was granted similar rights. Further, as it had come to the Council’s attention that freed men were cutting timber in a careless way and damaging the trees, they were henceforth forbidden to do so.¹³⁰ By October 1658, however, it was apparent to the Council that ‘forest-lands not yet allocated but provisionally set aside for common use, are being recklessly destroyed...’. The resultant placaat of 2 October was a far-reaching and thorough resolution that provided the basis for the conservation and usage of forests for decades to come. The placaat denied all Company men and freed men access to the said forests, declaring that ‘...those requiring timber or other wood ... are to buy what they want at a reasonable price from the free sawyers.’ Every man was free to use what they could find on their own property, but:

[n]o-one [was] to cut even the smallest branch on the inside or outside of the Company’s bush standing along the Bush River as far as the Liesbeeck River inclusive.... The lime and brickmakers may not use the small bushes growing in the dunes for fuel for their ovens, as the total destruction of these bushes would greatly inconvenience the farmers, who are accustomed to plait the walls of their houses therewith.¹³¹

On 12 October a further placaat was issued against the felling and destroying of yellow-wood, ‘the most useful of all woods for making planks, and the scarcest in the Cape forests.’ Henceforth these could only be felled for the making of planks, and only by authorised persons in authorised places.¹³² This was the first placaat specifically aimed at protecting an indigenous species.

In December 1658, Van Riebeeck informed the free burghers that ‘whereas the woods containing serviceable timber were as a rule despoiled, free carpenters and sawyers have now been given the right to cut and prepare timber in a proper way, so that posterity might also have some wood for their needs and not be at a loss’.¹³³

Minerals and Exploration

The settlers were always on the lookout for mineral resources that might help fund their settlement. In early 1654, they made attempts to extract silver, but this proved worthless.¹³⁴ On 23 December, 1656, Van Riebeeck was ‘on his

usual walk in search of some commodity or other,' and found 'very fine white corallite, soft and easily cut and in quality equal to that found in Batavia' in the dunes behind Lion's Rump (now Lion's Head). He judged it useful for building, as brick making had proved hard work, and required a lot of wood fuel.¹³⁵ The Dutch were particularly interested in finding precious minerals and stones, and as they had to constantly import copper to trade for cattle, they were keen to discover a local supply (which Simon van der Stel would do in 1685). Several expeditions were sent inland, primarily to find new peoples to trade cattle with in the earlier years, but always with instructions to keep a lookout for other precious goods such as 'ostrich feathers, elephant and hippopotamus tusks, rhinoceros horns, civet, amber, gold, honey and the like'.¹³⁶ On an expedition in 1657, the surveyor, Pieter Potter, was to:

survey accurately the valleys, mountains, hills, waters and rivers, taking their bearings, measuring the distances and taking soundings in accordance with the principles of chorography, for the purpose of charting everything accurately, so that we may henceforth know what course to take when travelling, and become acquainted with the situation of the forests and lands which may be suitable for cultivation....¹³⁷

In a memorandum to the officers of the galliot *Parkijt*, sailing up the west coast to Saldanha Bay, Van Riebeeck instructed them to 'dry some skins of skates and sharks and bring them to us so that we can see whether they are of the same kind as those which are in demand in Japan' (it is not clear what became of this, but Chinese markets have long since fed a lucrative (now illegal) trade in shark fins out of Cape Town, officially banned in 2004).¹³⁸ An exploratory expedition of 1660 sent into the interior took samples of spices including pepper, mace, cloves, nutmeg, cinnamon and sugar, in the hope that they would be recognised and offered in trade. Salt collection and processing was outsourced.¹³⁹

Weather

The Dutch kept a careful record of the weather, daily *Journal* entries including notes on wind strength and direction, rain, hail, drizzle, humidity (which they regarded as good for the growth of plants), snow on the mountains in late July, sunshine, and so forth. On 2 August, 1652, they made an interesting observation from the rump of 'Lion Mountain' above Table Bay, noting that there was a Northwest wind blowing at sea, meeting a Southwest wind blowing in the bay. They concluded that '[t]his observation conclusively proves that our record of the winds in the bay does not agree with the winds which blow at sea outside the bay. This we have often assumed on account of the heavy seas usually rolling into the bay from the N.W. at this time of year.'¹⁴⁰ Likewise, each month entry in the *Almanac* includes brief, relevant weather information, including rainfall, wind strength and direction, and sunshine.

Nutrition and Health

The refreshment station was established at the Cape, despite the expense, because of the terribly high death rates on the Company's ships. There are numerous accounts in the *Journal* of ships arriving at the Cape with crews crippled by scurvy and other conditions.¹⁴¹ In their first winter, the settlers themselves were racked with various diseases, fevers and the bloody flux (diarrhoea), resulting in a steady succession of deaths and a drastically depleted workforce.¹⁴² In August 1652 it was concluded that the continuing illness and deaths were partly the result of bad diet, the supposition being that subsisting on greens without fresh meat was probably the cause. Fish (mainly Southern Mullet [harder] and White Steenbras) were netted to help sustain the men during this initial phase of heavy physical work.¹⁴³ On days when the catch failed, they were fed only groats and peas, and by February 1653 the men were virtually on starvation rations.¹⁴⁴ Once adequate shelter had been built and food supplies stabilised, the situation would greatly improve, but throughout the first decade death rates from disease remained high, including the Van Riebeecks' first child born at the Cape.

Paying careful attention to the phases of the seasons as he did, Van Riebeeck observed that there were two unhealthy periods of the year, from February to April, and July to September. Writing of the latter period, he noted that '[i]t seems in this season of the year while the monsoon is turning, to be somewhat unhealthy as many become ill daily. It does not last longer than three weeks, no one escapes without a touch, but rarely anyone dies'.¹⁴⁵

Initially, the VOC showed little interest in the medical possibilities of the indigenous plants at the Cape, which was merely a way station en route to the East Indies, which with its rich array of spices was the focus of their attentions. The Surgeon General in Amsterdam prepared a list of medicines for the Cape settlement, which included 'theriak, andiomach, Egyptian ointment, vigorous defensive plaster and diachylon plaster with gum'.¹⁴⁶ Further, *Journal* entries suggest that Van Riebeeck may have looked to the East for guidance on materia medica, influenced by his personal experience, and the more advanced state of botany in the East Indies. Opium and ginseng (*Panax ginseng*) are used in the *Journal* as comparisons for *dagga*. In 1656, the Dutch cut open a porcupine in search of the *pedra porca*, a stone found in Malacca and said to have healing properties.¹⁴⁷ This 'stone' (it was not found in the porcupine) may be the 'snake-stone' later imported from the Indies to treat snakebite, shown to Thunberg at Tulbagh in the Cape in 1772.¹⁴⁸

The limits to Van Riebeeck and his colleagues' interest in indigenous medicinal plants have been noted. In this regard, it is pertinent that it was only in the late 1660s, a few years after he left the Cape, that it became official VOC policy to investigate the medicinal qualities of local plants to treat local diseases. The medical shop in Batavia, which would later import plants grown at the Cape, was set up the year after Van Riebeeck left, in 1663.¹⁴⁹

There are a few accounts of the use of indigenous herbs and medicines recorded by visitors to the Cape in the first decade, notably by Johan Nieuhof (1654), and there is a story told by Jean-Baptiste Tavernier of a Dutch noble cured of a septic leg by Khoikhoi doctors in 1661 (the surgeons in Batavia had given up on him).¹⁵⁰ In later years the well known doctor William Ten Rhijne (1673), and notably Peter Kolb, who lived at the Cape for several years from 1705, made notes on Khoikhoi medical practices. In most cases, their stays were short and they did not have time for more than brief observations.¹⁵¹ Further, Ten Rhijne noted that Khoikhoi medical practitioners refused to divulge the contents and mixtures of their medicines.¹⁵² Kolb similarly noted that: 'the doctors suffer none to see 'em gather and prepare their remedies. All their salves and ointments, powders and poultices are *nostrums*; and they keep the preparations very secret.'¹⁵³

It seems that the kinds of relationships that Garcia da Orta, Bontius, Van Reede and Nicolas L'Empereur managed to forge with indigenous medical practitioners and herbalists in the East Indies were not entered into at the Cape. Perhaps it was more difficult to establish with nomadic peoples, and perhaps it was because of the low opinion of the Khoikhoi held by the Dutch.¹⁵⁴ It should be said, however, that Van Riebeeck's attitude towards the Khoikhoi as expressed in the *Journal* is difficult to pin down. For a start, there were many groups and he devoted much energy to trying to work out their various characteristics, attitudes and social structures.¹⁵⁵ Essentially, his opinions fluctuated with the vicissitudes of his dealings with various individuals and groups. Perhaps, particularly after their experiences with the dissimulating Khoikhoi interpreter known as 'Harry' (who spoke English) – who was so evidently not Montaigne's 'simple, crude fellow' who could be trusted to impart the unadorned truth – the Dutch simply weren't prepared to record Khoikhoi information on the important matter of medication.

Close reading of the *Journal* does, however, provide an interesting insight into Khoikhoi medicine. In February 1657, there is a detailed description of the Khoikhoi treating snakebite by means of bloodletting and the use of warm cow dung.¹⁵⁶ In November 1658, it is reported that a sailor was bitten by an adder. He was treated by a Dutch surgeon at the fort, but the *Journal* writer comments: 'the Hottentot surgeons know what to do immediately, but none of them were at hand, otherwise we would have made use of them, as we had seen their remedies proved'.¹⁵⁷ It seems the Dutch were well aware of the skills of Khoikhoi healers, and quite prepared to make use of them.

While the official records may reveal little about whether the Dutch made investigations into indigenous medicines in the first decade, Laidler and Gelfand argue that this local knowledge was to form the 'basis for folk medicine among the local whites'.¹⁵⁸ The *Almanac* does not mention the Khoikhoi wonder drug *buchu* (*Agathosma* spp.), exported to Europe and America from the early 1800s, but contains folk remedies for ailments ranging from scorpion bites to breath-

less horses, the bloody flux to the stone. The liver of an otter was an ingredient in a cure for shortness of breath, and marsh marigold root (*Caltha palustris*) for the dropsy.¹⁵⁹

HENDRIK ADRIAAN VAN REEDE TOT DRAKENSTEIN AND SIMON VAN DER STEL

The pioneering work carried out by Van Riebeeck and his men was eclipsed within 20 years' of his arrival by developments initiated by Amsterdam regent Joan Huydecoper van Maarsseveen, his nephew Simon van der Stel (1639–1712), and that extraordinary soldier, company official and botanist, Hendrik Adriaan van Reede tot Drakenstein (1636–91). In October 1684, Van Reede was appointed Commissioner-General, heading a commission of inquiry into affairs in the East Indies, and he arrived at the Cape of Good Hope on 19 April, 1685. Since his first visit to the Cape in 1657, there had been considerable progress in the gardens and botanical investigation of the region. A medical section had been added to the Company's garden, and Van Riebeeck's successors Borghorst and Godske had sold medicinal herbs to Cleyer's medical shop in Batavia, as well as artichoke plants and various garden seeds.¹⁶⁰

By the 1670s the Cape garden was coming into its own as an acclimatisation garden for indigenous, Asian and European medicinal plants. Huydecoper arranged that his nephew Joan Bax be transferred there from Ceylon, and once in place as commander at the Cape in 1676, Bax gratefully sent his uncle all manner of curiosities including various live birds, a rhinoceros horn chalice, chests of bulbs and seeds and a herbarium of dried Cape flowers. Bax employed a draftsman to illustrate the Cape flora, sending a number of booklets to Huydecoper, all of which encouraged an interest in the fauna and flora of the Cape in Europe. Huydecoper sent out a skilled medical botanist, Jan Hendriksz de Beck, to manage the gardens, as well as seeds of various Dutch trees including oaks, beeches and hazelnut trees. Sadly, Bax died after only two years at the Cape, and Huydecoper next arranged that another nephew of his, Simon van der Stel, become commander there in 1679 (he was promoted to governor 1691, retiring in 1699). The visits of Paul Hermann in 1672 and 1680, the second en route back from the Indies to become professor of botany at Leiden (1680–95), also helped to put the Cape on the map of 'tropical' botany.¹⁶¹

Simon van der Stel oversaw the acclimatisation of rare plants including cinnamon, clove and camphor trees, before sending them on to the Amsterdam garden and the Dutch Grand Pensionary Caspar Fagel's botanical garden at his country house near Noordwijk. He sent an expedition to Namaqualand in 1683, including the chemist and artist Hendrik Claudius, who had been sent to the Cape by Andries Cleyer to draw and paint its plants, start a herbarium and collect minerals and drugs. (Cleyer's business as supplier of medicines to the

Company in Batavia was very profitable, and he financed Claudius's activities at the Cape.)¹⁶²

After an expedition into the hinterland conducted as part of his inspection of the colony in 1685, Van Reede wrote praising the diversity and uniqueness of the Cape flora, speculating that 'doubtless [the] soil brings forth many strong herbs serving mans' health if they were known and used in the right way, which will also be profitable for the Honourable Company to be examined'.¹⁶³ He also authorised Simon van der Stel to lead an expedition to Namaqualand (the commander required special permission to be away from the colony for such a long period¹⁶⁴), to investigate further the possibilities of silver and copper mining, while of course also noting what else might be found there.¹⁶⁵

On the whole, in the first two decades of settlement, the Dutch had only noted plants if they were useful for consumption (for example sorrel and mustard), construction (reeds, yellowwood), for boundary fences (wild almonds) or if they were a nuisance (kelp). There were comprehensive lists of birds and animals, sometimes with descriptions of behaviour, as they were hunted, caused damage to livestock or crops, were considered for domestication, or were simply dangerous. Insects are mentioned as pests (locusts and caterpillars), or as useful (bees). Snakes are mentioned as vermin, tortoises as valuable for their shells, and fish as edible or not.

Van Riebeeck had set about observing and describing the environment in order to understand and control it – using the kind of empirical approach to mastering and improving nature advocated by Francis Bacon. By the 1670s the settlement was secure, and this emphasis had begun to change. Van der Stel's expedition of 1685 was informed by an approach to natural history recognisably scientific in a modern sense. Hendrik Claudius accompanied the expedition, and his watercolours of the fauna and flora they encountered, along with accompanying descriptions, became famous. As the introduction to a recent edition of the *Codex Witsenii*, a collection of Claudius' work assembled for Amsterdam regent Nicolaas Witsen in 1692, says, it shows that:

the early settlers were interested in more than merely exploiting the marketable resources of the country. Furthermore, the annotations of some of these drawings contain the earliest information about the use of the flora and fauna by the indigenous inhabitants.¹⁶⁶

In defending the scientific contribution of the 'early settlers' of Van der Stel's time, this introduction manages to dismiss the earlier work of Van Riebeeck's era which was informed by an approach to natural history driven by market concerns.

CONCLUSION

In sum, what can we say about the Dutch's interactions with the environment in the period of Van Riebeeck's command? First, by the end of his time at the Cape, Jan had to face the failure of intensive mixed agriculture. He had come from the Netherlands armed with a variety of European seeds and plants, an unfeasibly high optimism about the growing conditions at the Cape, and the techniques of intensive European agriculture as practised in the limited, hard-won land of the Netherlands. However, economic conditions, largely determined by the VOC's policies, meant that the free burghers at the Cape were driven to reduce their investment of labour and capital to a minimum. This meant they did not make sustained use of labour intensive techniques such as crop rotation, weeding and fallows, and did not grow fodder crops, rather pasturing their livestock on nearby veld, thus losing the benefits of their manure. They tended to focus on crops that gave a fast return, and even then, the temptation was to turn to purely livestock farming.¹⁶⁷

Over his ten years as commander, however, Van Riebeeck did not allow these limitations and disappointments to curb his endeavours. He oversaw a heroic sustained, systematic effort to establish an impressive range of food plants in the novel conditions on the Cape Peninsula – in the process irrevocably altering the natural environment. Some of these exotics, such as grapes, maize, cereals, ground nuts, potatoes, cabbages, apples and citrus, were to have an important and lasting influence on the societies and economies of the region. (By the time he left the Cape, Van Riebeeck's estate at Bosheuvel boasted 1,244 fruit trees of 12 different species, thousands of vines, wheat and barley fields and various vegetables.¹⁶⁸) In his notes to his successor Wagenaer, Van Riebeeck refers to the *Caepse Hoveniers Almanach* he had compiled, with its recommendations on the tending, sowing and planting of the Company gardens: 'since through the length of time and more experience better and better knowledge of one thing and another is required.'¹⁶⁹

While Van Riebeeck was of necessity focused on making the settlement self-supporting, and on establishing the herds of livestock and food plants necessary to fulfil the VOC's instructions, he was by no means blind to the possibilities of the indigenous fauna and flora. On the contrary, he and his men were alert to the potential of local natural resources, observed the local peoples' use of indigenous plants, and actively cultivated them for food and protection. As I have shown, there is good evidence that the Dutch passed this knowledge on through the *Almanacs* and folk lore.

Having identified the usefulness of local species of fauna and flora, Van Riebeeck was moved to prevent their destruction when this was threatened by over exploitation, issuing placataats for the protection of timber and against grass burning, and controlling seal harvesting. Freed men demanding access to timber were told that the resource was being managed for posterity, and the placataats

and methods instituted by the commander and his committee were based on a confidence that their accumulated observations and experiments provided a basis for managing the land that had predictive power.

That the contribution of Van Riebeeck and his colleagues has hitherto not been properly recognised may be partly the result of anachronistic ideas about what qualifies as natural history. Further, the rate of development of the natural sciences in the latter half of the seventeenth century resulted in natural historical work that approximated to what Linnaeus would create as the gold standard in the next century being undertaken at the Cape only decades after Van Riebeeck. On a historiographical level, historians of this period at the Cape of Good Hope – particularly as retrospectively read with modern South Africa and apartheid in mind – have concentrated on the roots of racial discrimination, slavery and Afrikaner nationalist mythologising of Van Riebeeck as ‘founding father.’

My purpose is not to herald Van Riebeeck as a hero of natural history and early conservationism, and certainly not to excuse his sometimes deplorable behaviour toward indigenous peoples. The natural historical observations recorded in the *Journals* are modest if judged by modern definitions, as are the ambitions and achievements of the conservation measures. Rather, my aim has been to show that he and his colleagues were responsible for establishing the empirical basis for future studies and conservation of the environment at the Cape, while also altering the environment in important and lasting ways. It is evident that some of this knowledge was learned from the indigenous peoples inhabiting the region. Surely it is time to give due recognition to the remarkable and lastingly influential work of these pioneers in the history of natural historical studies and the conservation and exploitation of natural resources at the Cape.

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I would like to thank Professor Michael Hunter for commenting on this material at an early stage, and two anonymous reviewers for their constructive suggestions.

NOTES

¹ R. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge University Press, 1995), 140.

² W. Beinart, *The Rise of Conservation in South Africa: Settlers, Livestock, and the Environment 1770–1950* (Oxford University Press, 2003).

³ M. Wilson et al. (eds.), *Codex Witsenii* (Iziko Museums of Cape Town & Davidii Media, 2002), 2.

⁴ R. Grove, *Green Imperialism*, 134–7, 141. Victor de Kock, *Those in Bondage* (Kenikot Press, 1971), 97.

- ⁵ J. Heniger, *Hendrik Adriaan van Reede tot Drakenstein (1636–91) and Hortus Malabaricus* (A.A. Balkema, 1986), 8.
- ⁶ H.B. Thom (ed.), *Journal of Jan van Riebeeck*, Vols. I–III (A.A. Balkema, 1952, 1954, 1958). *Journal*, Vol. I, XXVIII.
- ⁷ P. Westra, Introduction to *Almanach der Africaansche Hoveniers en Landbowers* (South African Library, 1984), IX.
- ⁸ J. Israel, *The Dutch Republic: Its Rise, Greatness, and Fall, 1477–1806* (Oxford University Press, 1998), 583, 584.
- ⁹ Cited in H. Cook, ‘Medicine and Natural History’, in *Renaissance and Revolution*, ed. J. Field and F. James (Cambridge University Press, 1993), 49.
- ¹⁰ H.J. Cook, ‘Global Economies and Local Knowledge in the East Indies: Jacobus Bontius Learns the Facts of Nature’, in *Colonial Botany*, ed. L. Schiebinger and C. Swan (University of Pennsylvania Press, 2005), 101.
- ¹¹ P. Sloan, ‘Natural History, 1670–1802’, in *Companion to the History of Modern Science*, ed. R. Olby (Routledge, 1996), 297.
- ¹² H.J. Cook, ‘Medicine and Natural History’, 49.
- ¹³ L. Schiebinger and C. Swan (eds.), ‘Introduction’, in *Colonial Botany* (University of Pennsylvania Press, 2005), 3.
- ¹⁴ H.J. Cook, *Matters of Exchange: Commerce, Medicine and Science in the Dutch Golden Age* (Yale University Press, 2007), 41.
- ¹⁵ In full, the *Generale Vereenighde Nederlantsche Geocroyeerde Oostindische Compagnie*
- ¹⁶ C.R. Boxer, *The Dutch Seaborne Empire 1600–1800* (Hutchinson & Co, 1965), 96.
- ¹⁷ J. de Vries, *The Economy of Europe in an Age of Crisis, 1600–1750* (Cambridge University Press, 1976), 131.
- ¹⁸ G. Theal, *History and Ethnography of Africa South of the Zambezi*, Vol. II, (Swan Sonnenschein & Co., 1909), 1–4.
- ¹⁹ G. Theal, *History and Ethnography of Africa South of the Zambezi*, 4–7.
- ²⁰ P. van Dam, *Beschryvinge van die Oostindische Compagnie*, Book 2, Part III, ed. F. Stapel (‘S-Gravenhage, 1939), 500.
- ²¹ H.J. Cook, *Matters of Exchange*, 51, 324.
- ²² H.B. Thom (ed.), *Journal of Jan van Riebeeck*, Vol. I, (A.A. Balkema, 1952), 2. With regard to Chinese gardeners, see Vol. I, 33, 35, 61.
- ²³ *Ibid.*, 347. On Annetje, see also *Journal of Jan van Riebeeck*, Vol. II, 35, and E.C. Godée Molsbergen, *Jan van Riebeeck en sy Tyd* (JL van Schaik, 1968), 78.
- ²⁴ *Journal of Jan van Riebeeck*, Vol. II, (A.A. Balkema, 1954), 333.
- ²⁵ *Journal of Jan van Riebeeck*, Vol. III (A.A. Balkema, 1958), 368.
- ²⁶ R. Elphick, ‘The Khoisan to c.1770’, in *The Shaping of South African Society: 1652–1820*, ed. R. Elphick and H. Giliomee (Maskew Miller Longman, 1989), 5.
- ²⁷ J. Diamond, *Guns, Germs and Steel*, (Vintage, 1998), 186–7.
- ²⁸ See H. Cook, ‘Global Economies and Local Knowledge in the East Indies: Jacobus Bontius Learns the Facts of Nature’, in *Colonial Botany*, ed. L. Schiebinger and C. Swan, 101–2.

²⁹ The section of the daily *Journal* kept up from the departure from Amsterdam in December 1651, to May 1662, was published in three volumes by the Van Riebeeck Society to coincide with the tercentenary celebrations in Cape Town in 1952. For a survey of the publication history of the *Journal*, see L. Witz, *Apartheid's Festival: Contesting South Africa's National Pasts* (Indiana University Press, 2003), 70–83.

³⁰ J. Israel, *The Dutch Republic*, 936–39.

³¹ C.R. Boxer, *The Dutch Seaborne Empire*, 197.

³² C. Hondius, *Klare Besgryving van Cabo de Bona Esperança* (Book Exhibition Committee Van Riebeeck Festival, 1952), 26, 28.

³³ *Journal*, Vol. I, 33.

³⁴ *Ibid.*, 35.

³⁵ *Ibid.*, 50–3, 56.

³⁶ *Ibid.*, 56.

³⁷ *Journal*, Vol. I, 122, 141, 341 and Vol. II, 126.

³⁸ *Journal*, Vol. I, 45, 52, 69, 78.

³⁹ *Ibid.*, 73, and see also 77. As Thom notes, the standard Dutch dictionary actually refers to the ‘Van Riebeeck Journal’ and suggests a ‘creeping’ weed of some sort, but cannot arrive at a conclusive explanation. Some entomologists have suggested it was rather a kind of eel-worm (nematode).

⁴⁰ *Ibid.*, 143.

⁴¹ *Journal*, Vol. I, 140.

⁴² *Journal*, Vol. I, 118 (22 December, 1652).

⁴³ *Journal*, Vol. II, 82.

⁴⁴ *Journal*, Vol. II, 65.

⁴⁵ *Ibid.*, 348.

⁴⁶ *Journal*, Vol. III, 112.

⁴⁷ *Ibid.*

⁴⁸ *Journal*, Vol. II, 53, 58.

⁴⁹ On wind damage see *Journal*, Vol. I, 120 for e.g., and on planting at Ronde Bosjen, Vol. II, 34, 36.

⁵⁰ *Journal*, Vol. II, 69, 81.

⁵¹ *Ibid.*, 276.

⁵² *Ibid.*, 283.

⁵³ *Ibid.*, 276.

⁵⁴ *Almanach der Africaansche Hoveniers en Landbowers* (South African Library, 1984), 29–30.

⁵⁵ *Journal*, Vol. II, 316. ‘Wheat’ is a mistake or odd choice of word, as elsewhere, it is correctly ‘corn.’ This maize came from the Americas of course, but its rapid spread to the Middle East confused botanists at the time and Fuchs’ famous herbal described it as an Asian plant, naming it *Turcicum frumentum*, or Turkish corn (see R. Forbes, ‘Food and Drink’, in *A History of Technology*, Vol. III, ed. C. Singer (Clarendon Press, 1957), 4).

⁵⁶ *Journal*, Vol. II, 319, 320.

⁵⁷ *Journal*, Vol. III, 158.

- ⁵⁸ *Journal*, Vol. II, 65.
- ⁵⁹ *Ibid.*, 132.
- ⁶⁰ *Ibid.*, 333.
- ⁶¹ *Journal*, Vol. III, 152.
- ⁶² *Ibid.*, 256.
- ⁶³ Cited in M. Karstens, *The Old Company's Gardens* (Maskew Miller Limited, 1951), 123. See also P. Kolb, *The present state of the Cape of Good-hope*, 2nd edn, Vol. II (Innys and Manby, 1738), 85.
- ⁶⁴ *Journal*, Vol. II, 327.
- ⁶⁵ *Journal*, Vol. III, 10.
- ⁶⁶ *Ibid.*, 256, but see also 401 for the slow uptake in vine planting by Free Burghers.
- ⁶⁷ On vines, see M. Karstens, *The Old Company's Gardens*, 51. *Almanac* references include 25, 26, 31, 32, 35, 36.
- ⁶⁸ *Journal*, Vol. II, 9–11, 114 fn2, 126–7.
- ⁶⁹ See for e.g. *Journal*, Vol. II, 316–17, 380.
- ⁷⁰ See for e.g. *Journal*, Vol. III, 153.
- ⁷¹ *Journal*, Vol. III, 185.
- ⁷² *Ibid.*, 196.
- ⁷³ *Journal*, Vol. I, 331. Of course the Dutch came to take most of what Harry said with a large pinch of salt.
- ⁷⁴ *Journal*, Vol. III, 20.
- ⁷⁵ P. Kolb, *The present state of the Cape of Good-hope*, 2nd edn, Vol. I (Innys and Manby, 1738), 182; *Journal*, Vol. II, 339.
- ⁷⁶ *Journal*, Vol. I, 96, 109, 118, 127, 193 (all fall within the period November–January).
- ⁷⁷ In R. Raven-Hart, *Cape Good Hope 1652–1702: The first fifty years of Dutch colonization as seen by callers*, Vol. 1 (A.A. Balkema, 1971), 213.
- ⁷⁸ P. Kolb, *The present state of the Cape of Good-hope*, Vol. I, 62–3.
- ⁷⁹ J.F.V Phillips, 'Fire: Its Influence on Biotic Communities and Physical Factors in South and East Africa', *South African Journal of Science*, 27 (1930), 352–67, 353.
- ⁸⁰ *Almanach der Africaansche Hoveniers en Landbowers* (South African Library, 1984), 25, 26, 27, 35, 37.
- ⁸¹ A. Theiler, 'Facts and Theories about *Stijfziekte* and *Lamziekte*', Part 3, *Agricultural Journal of the Union of South Africa*, 4, No.1 (July 1912), 40.
- ⁸² *Journal*, Vol. II, 276, fn 403.
- ⁸³ *Ibid.*, 325, 326.
- ⁸⁴ *Ibid.*, 404.
- ⁸⁵ *Ibid.*, 318.
- ⁸⁶ *Ibid.*, 383, 390.
- ⁸⁷ *Journal*, Vol. I, 127, 128, 139, 140.
- ⁸⁸ *Journal*, Vol. II, 41, 42, and Vol. III, 120, 233.
- ⁸⁹ *Journal*, Vol. II, 383 and Vol. III, 163, 309.

- ⁹⁰ *Journal*, Vol. I, 75. However, Vogel notes that private persons bred ostriches in his account of his visit in 1679, in R. Raven-Hart, *Cape Good Hope 1652–1702*, Vol. 1, 213.
- ⁹¹ *Journal*, Vol. II, 79 fn2, 372.
- ⁹² *Ibid.*, 317, 344.
- ⁹³ See for example Van Harwarden's description from November 1658, *Journal*, Vol. II, 378, and Vol. III, 281, 356.
- ⁹⁴ *Journal*, Vol. I, 91, 99, Vol. II, 390.
- ⁹⁵ *Journal*, Vol. I, 38.
- ⁹⁶ *Journal*, Vol. II, 326; P. Kolb, *The present state of the Cape of Good-hope*, Vol. 2, 174.
- ⁹⁷ *Journal*, Vol. III, 279, 281.
- ⁹⁸ *Journal*, Vol. I, 61.
- ⁹⁹ *Journal*, Vol. III, 308–9.
- ¹⁰⁰ *Journal*, Vol. II, 87 fn4.
- ¹⁰¹ *Journal*, Vol. I, 216, 265–7, 371.
- ¹⁰² See for example *Journal*, Vol. I, 59, 84.
- ¹⁰³ *Ibid.*, 66, 160.
- ¹⁰⁴ See for instance *Journal*, Vol. III, 366 and Vol. I, 68.
- ¹⁰⁵ *Journal*, Vol. I, 164.
- ¹⁰⁶ *Ibid.*, 30.
- ¹⁰⁷ *Ibid.*, 46.
- ¹⁰⁸ M. Karstens, *The Old Company's Garden*, 18, 19.
- ¹⁰⁹ M. Roberts, *Indigenous Healing Plants* (Southern Book Publishers, 1990), 214, 100.
- ¹¹⁰ *Journal*, Vol. I, 71, and see also 74.
- ¹¹¹ M. Karstens, *The Old Company's Garden*, 156.
- ¹¹² *Journal*, Vol. I, 227. See also M. Karsten, *The Old Company's Garden*, 61.
- ¹¹³ *Journal*, Vol. I, 127. See also Vol. III, 316.
- ¹¹⁴ *Journal*, Vol. III, 449.
- ¹¹⁵ *Almanach der Africaansche Hoveniers en Landbowers*, 32.
- ¹¹⁶ *Ibid.*, 33.
- ¹¹⁷ *Journal*, Vol. III, 259, 303. See also Vol. II, 286.
- ¹¹⁸ *Journal*, Vol. I, 43, 44.
- ¹¹⁹ See for e.g. *Journal*, Vol. III, 17, 38.
- ¹²⁰ *Journal*, Vol. III, 173.
- ¹²¹ *Journal*, Vol. II, 58, 59. On tree identity, see M. Karsten, *The Old Company's Garden*, 38.
- ¹²² *Almanach der Africaansche Hoveniers en Landbowers*, 28.
- ¹²³ *Journal*, Vol. I, 59.
- ¹²⁴ *Journal*, Vol. II, 77.
- ¹²⁵ *Journal*, Vol. I, 44.

- ¹²⁶ *Ibid.*, 60.
- ¹²⁷ *Journal*, Vol. II, 317 fn2.
- ¹²⁸ *Journal*, Vol. I, 81.
- ¹²⁹ *Journal*, Vol. II, 164.
- ¹³⁰ *Ibid.*, 180.
- ¹³¹ *Ibid.*, 347, 348, and fn 348.
- ¹³² *Ibid.*, 350, 351.
- ¹³³ *Journal*, Vol. II, 397.
- ¹³⁴ *Journal*, Vol. I, 211–213.
- ¹³⁵ *Journal*, Vol. II, 81.
- ¹³⁶ *Ibid.*, 160.
- ¹³⁷ *Ibid.*, 161.
- ¹³⁸ *Journal*, Vol. III, 273. On shark fins, see <http://www.flmnh.ufl.edu/fish/sharks/InNews/kitchen2007.html>, accessed 21/01/08.
- ¹³⁹ *Journal*, Vol. III, 289. On salt, see Vol. II, 387, 404.
- ¹⁴⁰ *Journal*, Vol. I, 53.
- ¹⁴¹ See for instance the cases of the *Draeck* in February 1654, the *Henriette Louijse* in August, and the *Swarte Bul* and the *Walvis* in October 1654, in *Journal*, Vol. I, 213, 258, 268, 269.
- ¹⁴² See for example *Journal*, Vol. I, 41, 44.
- ¹⁴³ *Journal*, Vol. I, 31, 47, 56, 64, 140, and Vol. II, 273 for regulation of fishing.
- ¹⁴⁴ *Journal*, Vol. I, 142
- ¹⁴⁵ P. Laidler and M. Gelfand, *South Africa: Its Medical History 1652-1898: A Medical and Social Study* (C.Struik, 1971), 15.
- ¹⁴⁶ P. Laidler and M. Gelfand, *South Africa: Its Medical History*, 10.
- ¹⁴⁷ *Journal*, Vol. II, 54.
- ¹⁴⁸ V. de Kock, *Those in Bondage* (Kennikat Press, 1971), 134.
- ¹⁴⁹ H.J. Cook, *Matters of Exchange*, 306.
- ¹⁵⁰ R. Raven-Hart, *Cape Good Hope 1652–1702*, Vol. 1, 22, 68.
- ¹⁵¹ See for example R. Raven-Hart, *Cape of Good Hope*, Vol. 1, 11, 14, 22, 68; and P. Laidler and M. Gelfand, *South Africa: Its Medical History*, 11.
- ¹⁵² R. Viljoen, ‘Medicine, Health and Medical Practice in Precolonial Khoikhoi Society: An anthropological–historical perspective’, *History and Anthropology* 11, No. 4 (1999): 520.
- ¹⁵³ P. Kolb, *The present state of the Cape of Good-hope*, 88.
- ¹⁵⁴ On the cultivation of such relationships in the East Indies see K. Raj, ‘Surgeons, Fakirs, Merchants, and Craftspeople: Making L’Empereur’s *Jardin* in Early Modern South Asia’, in *Colonial Botany*, ed. L. Schiebinger and C. Swan, 257–8.
- ¹⁵⁵ See for instance *Journal*, Vol. III, 257–62, 444.
- ¹⁵⁶ *Journal*, Vol. II, 88.
- ¹⁵⁷ *Ibid.*, 382.
- ¹⁵⁸ P. Laidler and M. Gelfand, *South Africa: Its Medical History*, 10.

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¹⁵⁹ See *Almanach der Africaansche Hoveniers en Landbowers*, 30, 33, 34. For otter and marsh marigold, see 34 and 36 respectively.

¹⁶⁰ J. Heniger, *Hendrik Adriaan van Reede tot Drakenstein*, 65, 69, 70.

¹⁶¹ See R. Grove, *Green Imperialism*, 137–8 (though for some reason he calls Joan Huydecooper ‘Maarten’), and J. Heniger, *Hendrik Adriaan van Reede tot Drakenstein*, 63.

¹⁶² J. Heniger, *Hendrik Adriaan van Reede tot Drakenstein*, 71, 72, and on Cleyer’s business, 29.

¹⁶³ *Ibid.*, 74.

¹⁶⁴ G. Theal, *History and Ethnography of South Africa before 1795*, Vol. II. (Swan Sonnenschein & Co., 1909), 279.

¹⁶⁵ *Ibid.*, 74.

¹⁶⁶ M. Wilson et al. (eds.), *Codex Witsenii*, 2.

¹⁶⁷ L. Guelke, ‘The White Settlers, 1652–1780’, in *The Shaping of South African Society: 1652–1820*, ed. R. Elphick, and H. Giliomee (Longman Penguin Southern Africa, 1979), 47.

¹⁶⁸ *Journal*, Vol. III, 402.

¹⁶⁹ Cited by P. Westra in his Introduction to *Almanach der Africaansche Hoveniers en Landbowers*, IX.

