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ENNZ provides a forum for debate on environmental topics through the acceptance of peer reviewed and non-peer reviewed articles, as well as book and exhibition reviews and postings on upcoming events, including conferences and seminars.

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Editor's Introduction

Vaughan Wood

It is just over ten years since the first issue of *ENNZ: Environment and Nature* appeared. In that time it has provided a forum for more than 40 research or review articles and more than 20 book reviews, together with a variety of other contributions ranging from poems to website reviews and even garden reviews. As New Zealand comes to terms with a raft of looming environmental challenges, including water allocation, the health of its rivers, metropolitan growth, and climate change, being able to provide a historical context to our understanding of these problems and to the debate about potential solutions will become ever more important.

This issue continues the strong tradition of *ENNZ: Environment and Nature*, and indeed New Zealand history in general, in examining colonised landscapes and economic botany, but with a modern twist. In the first article of this issue, Linda Tyler explores the thinking and technology behind the botanical illustrations in John Buchanan’s nineteenth century works on New Zealand grasses, which served as valuable proxies for the specimens themselves when it came to practical identification and the initial formulation of ideas about their taxonomy and physiology. Such research is in keeping with an emerging trend in environmental history scholarship, that is, of critical examining the forms in which information is presented to audiences as much as the information itself – the environmental historian’s metadata, so to speak. Julia Wells also breaks new ground with her examination of the writings of Dennis McCarthy, a physician with the Colonial Service in East Africa in the early twentieth century. Considering how New Zealand experiences impacted on observations and understandings in another landscape setting, albeit one that was also recently colonised, offers an interesting contrast to studies of the impacts of foreign perceptions and experience on the environmental behaviour of immigrants to New Zealand. Vaughan Wood then complements existing regional studies with his examination of the largely overlooked phormium flax industry in Canterbury. This is partly an exercise in recovery history, but it also explores the question of why the industry faded so quickly.
after such a promising start. Lastly, Paul Star reviews *Standing My Ground* by Otago botanist and conservationist Alan Mark. In a detailed appreciation of Mark's memoir, he observes how it provides a valuable insight into some of New Zealand's key conservation organisations from an insider's perspective.
Illustrating the *Grasses* and the *Transactions*: John Buchanan’s Development of Technologies for Lithography in Natural History

Linda Tyler

Natural history, and in particular, botanising was a popular interest for all strata of society in nineteenth century colonial society. Botanical science relied on illustration to convey the wonders of ‘the vegetable kingdom’ throughout the era of colonial expansion, and was boosted to a peak in the mid-nineteenth century with the interest created by the publication of Charles Darwin’s *On the Origin of Species by Means of Natural Selection* in 1859.

Any able plantsman or woman could make a discovery of a species ‘new to science’. Specimens gathered and pressed by dedicated amateurs could be as important as those discovered by members of the nascent scientific profession in describing types. The centre for scientific authority was the Herbarium founded at the Royal Botanical Gardens at Kew in London in 1853. Plants were shipped to William Jackson Hooker (1785-1865) and then from 1865 to his son and successor Joseph Dalton Hooker (1817-1911) to be named and pass from being mere specimens to becoming the holotypes for the species.

Joseph Hooker’s *Flora Nova-Zelandiae*, published by Kew in 1855, established the written descriptions for New Zealand plants from these holotypes and was updated as the *Handbook of New Zealand Flora* in 1864 and 1867. Duplicates of the same plant (isotypes) formed the basis for colonial herbaria or plant libraries where books were illustrated not only by using techniques of direct printing and photography but also with exsiccata or the dried specimens of the plants themselves.

One of the grandest examples of natural illustration was published at London in 1816. This was *Hortus Gramineus Woburnensis: or, an account of the results of experiments on the produce and nutritive

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1 Linda Tyler has been the Director of the Centre for Art Studies at the University of Auckland since 2006. Previously, she was Curator of Pictorial Collections at the Hocken Library at the University of Otago for eight years, where she became interested in the artist and botanist John Buchanan.
qualities of different grasses, and other plants used as the food of the more valuable domestic animals: instituted by John Duke of Bedford, by George Sinclair (1786-1834). Arguably the world’s first ecological experiment, the work carried out at Woburn Abbey under the direction of Sinclair (gardener to the Duke of Bedford) attracted considerable interest, not least from Charles Darwin, who made use of it in The Origin of Species. In the first edition published at the Duke’s expense, Sinclair’s catalogue included thirty-five samples of seeds, plus 123 dried specimens (some hand-coloured) mounted on blank leaves, with their Latin and English names printed on slips which were pasted in. It made a very handsome volume, but the logistics of its production were uneconomic. For the larger commercial editions that were published in 1824 and subsequently, conventional illustration processes were used.

The Herbarium attached to the Colonial Museum in Wellington, New Zealand made increasingly large numbers of native plants available for consultation and study as the country was mapped. Coincident with this development was the local enthusiasm for collecting ferns, modelled on the English precedent from the 1850s. The Victorian fern craze or ‘pteridomania’ had originated with London surgeon Nathaniel Ward’s accidental discovery in 1829 that potted gardens made airtight by glass enclosures would self-water at night with condensation of the plants’ transpiration, meaning that live plants could be traded and transported over long distances. New Zealand was already famous for its ferns, and there were several enterprising pioneers who prepared volumes with natural illustrations, like those from British publishers in the 1830s and 1840s. Using a cyanotype photogram process similar to that of Anna Atkins almost forty years earlier, for example, Herbert Boucher Dobbie (1852-1940) published New Zealand Ferns in two parts with 104 pages of white silhouettes on blue paper in 1880. Such albums seem to have been prepared primarily for tourists, and were often bound in calf-backed kauri wooden boards. About 1870, an Auckland ‘dealer in ferns, shells and curios’ named Eric Craig published one such album called New Zealand Ferns.

Nature printing, where the fronds were inked and pressed into paper, was one method by which fern collections could be quickly formed, especially when drawing or mounting and storing abilities were lacking. Alois Auer, Director of the Government Printing Office of Vienna, patented his Naturselbstdruck method of printing in 1852. Henry Bradbury became familiar with Auer’s process while studying graphic arts in Vienna and introduced it into England in 1855, when his father’s firm used it for the fifty-one colour plates in T. Moore and J. Lindley’s folio *The Ferns of Great Britain and Ireland* which was published at the very high price of six guineas in 1855-56. Even using a large folio format, it was not possible to illustrate the specimens without breaking the fern fronds to fit onto the plates for electrotyping – one of the weaknesses of the process for which only natural size was possible. A slow seller, Bradbury decided to issue the smaller and less expensive *Octavo Nature-Printed British Ferns* (1859-60). Moore selected smaller examples and wrote a new text and sold this publication for two guineas a volume.

Plant images produced by the nature printing method are characterised by their precise and detailed rendering of structures. This precision is one reason for the favouring of the technique for scientific purposes, since botanists could use them to carry out comparative morphological studies. In addition, the use of nature-printing offered a solution to two kinds of problems encountered by botanists: the conservation of herbaria which were frequently destroyed by insects, and the production of images that were both accurate and affordable. Christopher Dresser (1834-1904), who held the Chair of Botany applied to Fine Arts at the South Kensington Department of Science and Art, gave a paper on ‘A New System of Nature Printing’ at the Society of Arts in March 1857 based on a lithographic process patented on 22 December 1855. In the lecture, he describes coating a leaf evenly with ink, before placing it with the prepared side downwards on a lithographic stone which has been warmed to keep the ink liquid when it comes into contact. A sheet of paper is

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then laid over the leaf and gently rubbed so that the ink leaves an impression on the stone, and this can be printed from, just like a drawing with a lithographic crayon.

This method of nature printing for the dissemination of images of new plants found in the colonies is seen first in a plate prepared by Ludwig Becker to illustrate Frederick von Mueller’s description of the species *Macadamia ternifolia* and published in the *Transactions of the Philosophical Institute of Victoria* (Australia) Volume 2 in 1858.4 His use of the process had no immediate followers, but from the late 1870s Frederick Manson Bailey (1827-1915) the Colonial Botanist of Queensland, used nature printing in several publications. In 1878 he produced an *Illustrated Monograph of the Grasses of Queensland*, issued by the Queensland government and printed by the firm of Warwick & Sapsford in Brisbane. Their process was unusual: the plates were printed lithographically, but each grass was electrotyped, from herbarium specimens, by Bailey and the Government Chemist, Karl Staiger. It proved a useful book for the Queensland pastoralist, but even though the volume was in large format, the grasses were bigger. As Bailey wrote, ‘often a small portion or plant has had to be used to fit the size of the plate.’5

For most scientific publications, however, drawing prevailed, with skilled draughtsmen employed to convey the characteristics of a specimen using techniques of lithography, albeit assisted by photography and microscopy. The *Transactions and Proceedings of the New Zealand Institute* was an annual publication of scientific papers presented by experts at the various provincial branches throughout the country, and was first published in Wellington in

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5 F.M. Bailey, *An Illustrated Monograph of the Grasses of Queensland: issued by the Board appointed by the government of Queensland in 1875 to inquire into the causes and the various diseases affecting livestock and plants*, electrotyped by K.T. Staiger (Brisbane: Warwick & Sapsford, 1879). On the cover of the copy in Special Collections at Otago University’s Library is handwritten: “Presentation copy to J. Buchanan from Queensland 1880. Inside front cover is presentation bookplate: “Presented to the Library of the Museum of the University of Otago by Peter Buchanan Esq. of Sydney, in memory of his brother John Buchanan F.L.S. who died 18th October 1898.”
1868 and issued in 1869.\textsuperscript{6} Until his retirement from government service in 1885, it was primarily illustrated by John Buchanan (1819-1898). He was associated with some of the New Zealand government’s first forays into science: the Reconnaissance and Triangulation Surveys of Otago in 1856, the Otago Provincial Geological Survey in 1863, the establishment of the Colonial Museum and Geological Survey of New Zealand in Wellington in 1865, and the layout of plantings of the Colonial Botanic Garden in Wellington in 1868, as well as publishing 29 papers based on his botanical research. He could be described as the colonial Victorian version of the Renaissance man.

Buchanan himself had no pretensions to being an artist and did not join any New Zealand art society or sketch club. Like his other interests - gardening, lithography and photography - his artistic abilities were put in the service of science. Aside from in the 1990 \textit{Dictionary of New Zealand Biography} essay by the late botanical illustrator Nancy Adams,\textsuperscript{7} and the outline of his career published in 2002 in \textit{Tuhinga} (the Museum of New Zealand Te Papa Tongarewa journal) by the same author,\textsuperscript{8} understanding of Buchanan’s practice has been sharply split between his contribution to New Zealand science, particularly botany, and his place in New Zealand’s art history.\textsuperscript{9} This paper aims to give a broader understanding of Buchanan’s significance for both New Zealand’s science history and its art history by considering his relationship to the emergent techniques of photography and lithography as he used them in carrying out his work as a draughtsman at the Colonial Museum in the mid nineteenth century.

\textsuperscript{6} Volume 1 was reprinted, with some additions, by the Government Printer in 1875. The \textit{Transactions} were originally printed by private contractors, but the work was taken over in 1888 by the Government Printer. See W.A. Glue, \textit{History of the Government Printing Office} (Wellington: R.E. Owen, Government Printer, 1966), 83.


\textsuperscript{9} A two-day symposium aimed at reconciling these two aspects was convened by the author with David Galloway at the University of Otago 29-30 November 2012.
Photography’s invention coincided with the establishment of colonial museology in New Zealand, and it was initially coupled to the idea of evidence, located as a useful technology within the larger scientific enterprises of observation, classification and documentation. Put at the service of ‘natural philosophy’, as science was described, photography allowed an apparently unmediated encounter with nature. It was quickly adopted by the leaders of colonial expeditions such as the Scottish naturalist and medical doctor James Hector (1834-1907). Hector seemingly pioneered photography’s use in the Geological Survey of Canada, just a few years after Frederick Archer’s patenting of the wet collodion process in 1851, and immediately prior to his being recruited to begin the geological survey of Otago and Southland in New Zealand.

From Otago, Hector went on to found the Colonial Museum and Geological Survey in Wellington, taking all his staff from the survey office in Dunedin with him, including John Buchanan. Trained as a textile designer, Buchanan could draw with facility and invention, but interpretation was not required in science. As photography was popularised in scientific work in the nineteenth century, the mechanical objectivity of the lens began to be seen as superior to the draughtsman’s work. As Carol Armstrong and Catherine de Zegher have observed, ‘the human agency responsible for [a photograph’s] manufacture [was] unacknowledged … the photograph was seen to be more effective in its depiction than other methods of representation.’

The essential task in botanical art is to reduce a plant from three dimensions to two. Using the plant itself to produce the image, in nature printing as in photography, was understood as a mechanical way of avoiding the need for the artist’s eye, and for mind and hand to process the image and flatten it. It was therefore seen to be more truthful than drawing, with the Austrian inventor of this process, Alois Auer, claiming it surpassed photography in

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Sir George Grey, as the member of parliament for Auckland City West in 1875, had the House of Representatives pass a resolution on 29 June 1876 ‘to the effect that a work on the native grasses of the Colony should be prepared, with nature-printed plates, and descriptions of each species, the work to be accompanied by an essay on the grasses and forage-plants likely to prove useful in New Zealand.’ This resulted in Buchanan having to learn how to produce lithographs by using nature printing rather than drawing in order to produce a publication akin to the 1816 English volume by Sinclair. *The Indigenous Grasses of New Zealand* (1880) was the first authoritative reference work on flora to be produced since the establishment of the Colonial Museum in Wellington in 1865 and was intended to assist with the identification of grasses for propagation purposes by farmers. The expansion of pastoral farming in New Zealand in the second half of the nineteenth century had created a need for

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15 John Buchanan, *Manual of the Indigenous Grasses of New Zealand* (Wellington: Colonial Museum and Geological Survey, 1880). In June of 1878 the first of three fascicles of 20 plates was published in Imperial Quarto size. In the preface, the Colonial Museum’s director, James Hector, explained that since the request had been for the grasses to be nature-printed and thus natural size, it had been ‘necessary to publish the work in a large size which is both inconvenient and expensive’. In the Museum’s Annual Report, Hector commented that the production was making good progress, ‘considering the difficulties to be contended with in bringing out such an extensive and laborious work. Parts I and II, comprising twenty-one folio plates were issued last year, and Parts III and IV are now ready for the binder. The letterpress of the remainder of the work is now in the printer’s hands, but some months will be required to complete the plates.’ *Fourteenth Annual Report of the Colonial Museum and Laboratory* (Wellington: George Didsbury, Government Printer, 1879), 8. It would be another two years before the work was complete, with the second of 23 plates appeared in June 1879, and the third of 21 plates in 1880. Despite Hector’s impatience with the process, the length of time it took to illustrate all 87 species of grasses allowed inclusion of new species that were discovered during the volume’s preparation. The consolidated Imperial Quarto edition with an imprint that stated that it had been published by command finally appeared in 1880 as *The Indigenous Grasses of New Zealand* priced at a costly 3 guineas. Later that same year, a smaller more user-friendly version in Royal Octavo was published as the *Manual of the Indigenous Grasses of New Zealand*. The Manual consists of all the plates in the Imperial Quarto edition together with a newly set letterpress and sold for a more affordable 7s 6d.
more information about the identity, distribution, spread, and forage value of grasses, both introduced and native.

Given the enthusiasm for nature printing and photography, botanical drawing might seem to be on the verge of redundancy by the late 1860s, as ‘the nature print and photography both satisfied the growing requirement that scientific illustration not be influenced by the subjectivity of the artist.’ 16 While agrostography, the branch of botany concerned with the systematic description of grasses, was not suited to photography due to the similarity of many of the species, nature printing preserved the idea of scientific objectivity. Botanical drawings had begun to be seen as allowing more subjective interpretations of a botanical specimen to infiltrate its representation. Lorraine Dalston and Peter Galison have argued for the documentation of Victorian science being a site where accuracy was celebrated and ‘Nature spoke for herself’, with conventional morality dictating that scientists restrain themselves from interpretation. 17 They chart the emergence of a new conception of objectivity and subjectivity in the mid-nineteenth century which is reflected in scientific image-making.

Photography was central to the establishment of the Colonial Museum in keeping with British precedents. The small booklet which Joseph Hooker sent to Hector entitled *Hints on the Formation of Local Museums* (1863) by Robert Hardwicke, Treasurer of the Wimbledon Museum Committee London, includes a recommendation for a photographic studio even in a small museum. 18 Photographs and photographic literature are documented in the earliest records of the Colonial Museum, and a photographic apparatus was taken on expedition for the Otago Geological Survey in 1863. In his second Annual Report for the Colonial Museum, Hector lists the acquisition of photographs of

18 Now in the Geological and Nuclear Sciences Library at Avalon, Lower Hutt.
casts from dies of the New Zealand Exhibition medal gifted by Alfred Eccles on behalf of the exhibition commissioners.¹⁹

Hector’s catalogue of the Colonial Museum’s Library from 1890 includes Volumes 12 to 20 (1860-1873) of the *British Journal of Photography*. A receipt dated 4 October 1862 shows that Hector purchased photographic apparatus from the photographer Joseph Perry in Dunedin,²⁰ and Buchanan lists photographic chemicals amongst the equipment taken to Fiordland. Buchanan’s albums show he was adept enough with the camera to make photographic copies of his own paintings when the latter went on exhibition in the New Zealand Exhibition in Dunedin in 1865.²¹ These examples point to an endorsement of photography’s role in the documentation, and copying of existing images. Secondary to drawing for scientific purposes, wet collodion process photography, though difficult to practice in the field, could be used to give an impression of a particular landscape. Given that the whole area of southwest Fiordland was described on maps as ‘terra incognita’ prior to Hector’s expedition, the camera was a valuable tool in making first recordings of a place, although no photographic prints from this journey survive.

In Wellington, outdoor landscape photography was promoted within the Philosophical Society circles. It was accepted practice by the late 1860s, with the Ross doublet plate camera being the type recommended by William Thomas Locke Travers in his ‘Notes on the Practice of Outdoor Photography’ in the *Transactions and Proceedings of the New Zealand Institute* in 1871.²² The Colonial Museum lists 12 of Travers’ photographs of New Zealand scenery acquired in 1868 and a further 26 in 1869. The 1871 Annual Report proudly lists the acquisition of a letter

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²⁰ Hector papers, Museum of New Zealand Te Papa Tongarewa Archives. I am indebted to Hector’s biographer, Simon Nathan, for supplying copies of the receipts for photographic chemicals and equipment supplied to Hector and the Otago Geological Survey in the period 1862-63.

²¹ In the Buchanan albums, Toitu Otago Settlers’ Museum, Dunedin.

from Archer, the British inventor of the wet plate collodion process.\textsuperscript{23}

The Government Printing Office established a photolithographic branch for printing maps, plans, drawings and photographs in 1873, recruiting Herbert Deveril (1840-1911) from Melbourne as the officer in charge.\textsuperscript{24} However, Buchanan’s illustrations for the \textit{Transactions} continued to be drawn rather than photographed. Buchanan often did the printing himself (annotating the prints with ‘J.B. del. et lith.’) or oversaw the work by the Lithographic Branch of the Lands and Survey Department. Scientific photographs could be used in museum displays however, and in intercolonial exhibitions, and also sold to the public or circulated amongst other members of the scientific fraternity locally and internationally. A carte-de-visite made in a Dunedin photographer’s studio at the time of the New Zealand Exhibition in 1865 shows Buchanan standing in profile, unfurling what at first appears to be a large scroll, but in fact is the articulated skeleton of the recently discovered \textit{Dinornis}, or moa, which Director Julius von Haast had put on display in the Canterbury Museum.\textsuperscript{25} Another photograph, gridded in pencil, was used to create a lithograph to illustrate Hector’s publication on the extinct native goose, \textit{Cnemiornis calcitrans} in the \textit{Transactions} in 1873.\textsuperscript{26}

Mechanical drawing aids were commonly used by Buchanan it would seem. Returning from London, Hector wrote to Mantell that he had obtained a large spectrograph which he was shipping to the Colonial Museum: ‘I want you to give [it] to Buchanan as I think it will be of use to him. It is a great improvement on the


\textsuperscript{24} “Photo-Lithographic Branch of Government Printing Department (Papers Relating to the Savings Effected by the), Presented to the House of Representatives, Session 1876” \textit{Appendices to the Journal of the House of Representatives}, 1876, H-22.


\textsuperscript{26} James Hector, “\textit{Cnemiornis calcitrans} Owen showing its affinity to \textit{Camellirostrate natafores}”, \textit{Transactions and Proceedings of the New Zealand Institute} 6 (1873). Buchanan’s whole-page lithographed illustration is tipped in between pages 76 and 77.
camera lucida’. A portable device with a beam-splitting prism on the end of an adjustable stand which was often used in conjunction with a microscope, the camera lucida allowed an artist to look down into the edge of the prism to view both the subject and their hand at the same time. The camera lucida (which could be used in daylight as opposed to the camera obscura which needed a darkened room to project a light image) was patented in 1807 by William Hyde Wollaston (1766-1828). Glass spectrographs, developed later in the nineteenth century, used reflections to create virtual images for tracing.

Photography, for Buchanan, was a useful tool for the prosecution of science it seems, but was secondary to drawing – with or without the use of drawing machines - as a test of observation. He wrote to Georgina Hetley (1832-1898), who had visited him in retirement in Dunedin during the preparation of the plates for her Native Flowers of New Zealand, published in London in three parts, 1887-1889, exhorted her to ‘draw first, then use your photograph for the work on the stone’. His view seems to have been that photography should not usurp the place of the scientific illustrator – it was as ‘Draughtsman to the Colonial Museum and Geological Survey’ that he was employed, after all.

Buchanan’s letter to Georgina Hetley suggests that he saw photography as having limited application in botanical work, and his archive shows that he continued to emphasise drawing, often using a microscope, to identify differences especially in flowering plants. As a Glaswegian, perhaps he knew of the famous incident from 1839 when William Henry Fox Talbot had sent examples of botanical photographs to William Jackson Hooker proposing that they collaborate on a volume of native plants, illustrated with

27 Hector to Mantell, 17 August 1875, in Simon Nathan and Rowan Burns, eds, A Quick Run Home: Correspondence while James Hector was Overseas in 1875-1876, Geoscience Society of New Zealand miscellaneous publication 133E, (Wellington, GeoScience Society, 2012), 22.
29 Letter, John Buchanan to Georgina Hetley, undated, c.1885, Hetley family papers, private collection, Christchurch.
30 William Jackson Hooker was Regius Professor of Botany at Glasgow University from 1820 until 1841.
'photogenic drawings'.\textsuperscript{31} Hooker dismissed the proposal, commenting 'Your beautiful \textit{Campanula hederacea} was very pretty as to general effect but it did not express the swelling of the flower, nor the calyx, nor the veins of the leaves distinctly.'\textsuperscript{32} Even Talbot's own uncle, William Thomas Fox-Strangeways, an amateur botanist, was concerned that photographs only showed the plain surface of ferns, and did not 'express the fructification or venation'.\textsuperscript{33}

It is reasonable to assume that Buchanan had some experience with both making photographs and using them in the production of illustration before leaving Scotland in 1851, but his introduction to the relatively new process of lithography does not seem to have occurred until after he reached New Zealand. When lithography was first used in the Scottish textile industry in 1834, Buchanan would have been 15 years old and still serving his apprenticeship as a pattern designer at a calico printing works. This new method of flat printing for cloth would eventually render block cutting obsolete in textile manufacture in Britain and must have been used in Glasgow prior to 1851. His inexperience with the process is recorded when he was preparing the drawings for the first volume of the \textit{Transactions of the New Zealand Institute} in December 1868. His colleague, the scientist Richard Gore sent the first lithographic proofs to the Museum's Director, James Hector with a note to say that these were Buchanan's first attempts with the crayon. It is remarkable then that, if he was self-taught in lithography, only ten years later he would be proficient enough with the process to adapt it to incorporate printing directly from the plant specimens themselves. The \textit{Indigenous Grasses} would go on to win Buchanan a third order of merit certificate at the Melbourne Exhibition in 1880-81 in recognition of his ability with lithographic processes. Clearly Hector admired Buchanan's facility with nature printing, sending printer's proofs of the plates to


\textsuperscript{33} Smith, "Talbot and Botany": 42.
Hooker in London for his comment. However Hooker failed to appreciate the technical skill, and responded: ‘What you want is a properly organised Bot. Garden like the Australian, Indian, Ceylon, Mauritius, the Cape, Trinidad, Jamaica, Guiana & Hong Kong – all these colonies are immeasurably ahead of you in this respect. Meanwhile your money is wasted on futile books on Grasses, the object of which it is difficult to conceive – dried specimens of the useful kinds would be cheaper to prepare & better suited to the wants of the ignorant.’

Buchanan’s technique for the nature printing of *The Indigenous Grasses* is his own adaptation of the European process, possibly because of the difficulty of procuring zinc and lead for the intaglio process. There was even some delay in the preparation of the plates initially, ‘owing’, according to Hector, ‘to the want of proper lithographic stones and other appliances which could not be procured in the Colony’. In order to make his nature prints, Buchanan first pressed and dried the representative specimens of each type of grass then coated the grass with grease before pressing it to the surface of a smooth plate of limestone. As is customary in the lithographic process, the limestone plate was then moistened and inked with Buchanan adding details by hand. The greasy imprint of each grass specimen accepted the ink but repelled the water with those parts of the stone that the grass had not touched accepting water and consequently repelling the ink. The resultant image was printed on paper through a press, to create a black image on a white background. A second printing stone provided the tinted background of the published plate.

The Museum of New Zealand Te Papa Tongarewa holds a complete set of specimens used in the production of Buchanan’s book, as well as his drawings of the floral parts. Hector makes it clear in the Preface to the *Manual* that Buchanan was charged

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with collecting the grasses for the book himself, and that where the collectors were other botanists they had been acknowledged. Buchanan is clearly indebted to Alexander McKay for gatherings on the Mount Arthur Plateau and H.H. Travers of Wellington is frequently cited as a collector for the Tararua Range and for Nelson Province, but for the most part, the grasses are Buchanan’s own discoveries. This results in them now having the unusual dual status of being both type specimens and worked materials. Remains of the printer’s ink can be seen on most of them and they are mounted in a ‘guard boo’ referred to as ‘Buchanan’s printer’s set’. The pages bear the same titles as the plates and are in the order of the plates but there was no obligation on Buchanan’s part to ensure that the specimens and the illustrations corresponded in every positional detail, as the specimens could only be mounted after the nature-printing procedures had been completed. His obligation seems to have been to ensure that the plants he used in nature printing became the specimens mounted in the guard book.

These same grasses now have the special status of holotypes, which is the term given to the type which establishes the name of a species or infraspecific taxon, or else they have the status of lectotype, a specimen designated as the nomenclatural type in the absence of a holotype. At the time of Buchanan’s creation of this guardbook, holotypes were not described as such nor as ‘type specimens’. Now they are considered taonga or treasures by the Museum of New Zealand which holds them. This is because for each of his newly defined taxa, Buchanan’s specimens, illustrations, distribution data, and commentaries established the standard example of the newly described species.

Science was advanced by Buchanan achieving the greatest possible verisimilitude in the illustrations, yet there is exaggeration and ornamentation in his rendering, suggesting that artistic interpretation also played a role. The book was envisaged as a practical manual for farmers as much as a scientific record for botanists. In Hector’s preface it is explained that the book was originally planned to include ‘an essay on the grasses and forage plants likely to prove useful in New Zealand’ and that this essay

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37 A botanical album with cardboard inserts to space the pages and thereby protect the specimens mounted therein.
would be chosen from those submitted to a competition for which prizes would be awarded. However, it had been pointed out to George Grey, who made this suggestion, that until an illustrated work on grasses was published ‘many would be precluded from joining in the competition’ because they would be unable to accurately identify many grass species.

To this end of accurate identification, Hector instructed Buchanan not only to find out how he could adapt the technique of nature printing to illustrate the grasses natural size but also to prepare enlarged drawings of floral parts using microscope dissections. Buchanan was also asked to use his own skills as a descriptive botanist to prepare a brief text to accompany each plate. Fifty endemic, 18 other indigenous, and 9 naturalised species appear in the publication, some of them under two names. As well as recording and describing indigenous species new to science the plates in the book made images of the grasses available to new colonists, particularly sheep and cattle farmers, who could then select appropriate ones to encourage or cultivate for pasture. With its high production values, and enthusiasm for the new species discovered, the Imperial Quarto edition, with 64 plates, and the smaller Royal Octavo edition gave colonists ready information on the characteristics of the fifty species of grass described, but according to later commentators Henry Connor and Elizabeth Edgar, he ‘over-dramatized their possible future utilisation’.38 Although plates from the book are now broken up and sold separately by dealers for framing and display, Buchanan’s prints of grasses were never meant to be considered as objects for aesthetic contemplation.

The production of The Indigenous Grasses resulted in Buchanan making a lasting contribution to science, then, but what implications does the volume have for the understanding of the development of the art of scientific illustration in the nineteenth century? Given that John Buchanan was already prized as a scientific illustrator by his employers at the Colonial Museum, why was he required to use the technique of nature printing for

the *Indigenous Grasses*, and does this compromise or enhance his reputation as an artist?

The choice of nature printing can be seen to relate to the establishment of ‘objectivity’ as the core principle of scientific research by the middle of the nineteenth century. Nature printing integrated several earlier ideals of artistic practice, among them the notion of ‘truth to nature’. Nineteenth century scientists were searching for an imaging technique which would overcome the limits posed by the subjectivity of the artist, and by the construction of ideal types for botanical illustrations.

Ironically, due to their precision and the values of authenticity and uniqueness which they embody, Buchanan's images in the *Indigenous Grasses* have now moved from science to art. Yet ultimately nature prints – and their successor technology, photography – underscore the importance of the artist as an active intermediary. Buchanan had no affection for the nature printing technique, and never returned to it again in a career of scientific illustration that lasted until 1885. In his work in botanical illustration he relished the opportunity to include whatever parts of a plant were deemed important by the particular audience he envisaged.

As an artist he worked to convey a generic three-dimensional structure by a deft use of the placement of parts including twisted leaves, colour, and shadows, suppressing the defects of the individual specimen and emphasizing the generic. His nature prints are flat and impoverished by comparison. The simulacrum that is the botanical drawing carries more conviction, and is more ‘real’, than an impression of the thing itself, in terms of its value as a complete picture. The problem with both photography and nature printing for botanical purposes was that these technologies reproduced the specifics of an individual plant rather than showing the generalities of the type which would allow any specimen to be recognised by comparison. To a botanist working in the 1860s, only a rendered drawing could characterise a species properly, ensuring that skilled draughtsmen such as John Buchanan would be assured of continuing governmental employment.
‘A Physician to the Sultan’: The East African Environment in the Writings of a New Zealand Doctor

Julia Wells

Dennis Douglas McCarthy was born, as he wrote, ‘during the dying days of the 19th century in the reign of Queen Victoria ... in a small house near the water tower in Invercargill, New Zealand’. After training at the Otago Medical School in Dunedin, McCarthy practiced in Southland’s Tokanui district, overseeing ‘a wild area’ with ‘nothing between [him] and the South Pole’. In the late 1920s, McCarthy joined the Colonial Medical Service and was stationed in Zanzibar, East Africa, on Unguja Island (also called Zanzibar Island) and Pemba Island, where he was one of just seven Europeans. McCarthy gradually specialised in tropical parasitology and was appointed Malaria Research Officer. In 1939 McCarthy joined the King’s African Rifles, rising to the rank of brigadier. After the war he practiced in the Pacific before returning to New Zealand, where he died in 1981.

Historians have examined colonial doctors such as McCarthy on several fronts. Since Philip Curtin’s seminal work on the connections between tropical medicine and British imperialism in Africa, medical historians have studied medicine’s role in consolidating and legitimising colonial rule on the African continent. Historians have also considered colonial officials as

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1 Julia Wells is currently undertaking a master's in history at Victoria University of Wellington. She would like to thank Vaughan Wood and Kathryn Hunter for their comments on earlier drafts and is grateful for feedback received on a version of this work at the 2015 Australia New Zealand Society for the History of Medicine conference.
3 Ibid., 12.
4 Ibid., 40D, 86. Note: McCarthy’s manuscript does not have simple integer page numbers, but often also utilises letters.
5 Ibid.
6 Ibid., 185-186.
7 Philip Curtin, Disease and Empire: The Health of European Troops in the Conquest of Tropical Africa (Cambridge: Cambridge University Press, 1998). For examples of influential works that explore links between medicine and colonialism in Africa see Megan Vaughan, Curing their Ills: Colonial Power and African Illness (Stanford: Stanford University Press, 1991); Maryinez
trans-imperial figures, whose professions took them around the globe, transmitting ideas and objects. Studies by scholars such as Alan Lester explore the life geographies of individuals, maintaining the specificity and complexity of the imperial experience and so accessing a deeper and more nuanced understanding of lives in the British Empire.\textsuperscript{8}

Such scholarship, however, has underexplored the role of colonial officials’ birthplaces and professions in shaping their experiences throughout the Empire. The vast majority of the literature represents all officials as homogenous Britons.\textsuperscript{9} Mary Pratt in \textit{Imperial Eyes} does discuss the importance of what she terms hyphenated identities, but focuses on the role that those with hyphenated identities played in critiques of empire.\textsuperscript{10} There is relatively little work on New Zealand born colonial officials and this deficiency is multiplied when Africa is considered. Similarly, the role of medical training as a mediating lens through which imperial doctors viewed foreign locations is underdeveloped.

Combining environmental history with imperial biography and medical history has the potential to further our understanding of the ways in which imperial officials from the colonies experienced new environments throughout the Empire.

When McCarthy arrived in Zanzibar, formal British control of the island extended less than thirty years. After Portugal lost its hold on East Africa in the early eighteenth century, Arab rulers – primarily from Oman – dominated the area and established Zanzibar as the centre of East African trade.\textsuperscript{11} Zanzibar’s trading

\begin{thebibliography}{9}
\bibitem{Pratt} For example, Lambert and Lester’s \textit{Colonial Lives} includes only one figure not from Britain. Ibid.
\bibitem{Pratt2} Mary Pratt, \textit{Imperial Eyes: Travel Writing and Transculturation} (London and New York: Routledge, 1992), 208-225.
\bibitem{Hatch} John Hatch, \textit{The History of Britain in Africa} (London: Andre Deutsch, 1969), 128-129.
\end{thebibliography}
prominence and East Africa’s proximity to Indian shipping routes turned British attention towards Zanzibar in the early nineteenth century.\textsuperscript{12} The 1822 Moresby Treaty nominally ended the region’s slave trade and permanently stationed a British government official in Zanzibar to supervise abolition.\textsuperscript{13} Indirect British influence steadily increased over the century, and although the British government initially avoided attempts to seize formal control, in 1890 Britain established the Zanzibar Protectorate.\textsuperscript{14} Direct rule entailed administration and over the next thirty years officials such as McCarthy entered the protectorate.

Figure One. Dennis McCarthy and his daughter Barbara, with unidentified women in Zululand, South Africa (mid 1930s).\textsuperscript{15}

As a doctor responsible for a partially rural district, McCarthy regularly encountered Zanzibar flora and fauna. W.H. Ingrams, writing in 1931, characterised the island as possessing five distinctive areas of vegetation: mangrove swamp; beaches and nearby rocky areas, featuring several species of palm; ‘scrub bush’, characterised by a strong odour; savannah; and tropical forest.\textsuperscript{16} By the 1930s Zanzibar’s forests had been severely

\textsuperscript{12} Ibid.
\textsuperscript{13} Ibid., 129.
\textsuperscript{14} Ibid., 130-131, 168.
\textsuperscript{15} All images are from Dennis McCarthy’s photographs, held by and used with permission of the Hager family.
depleted, with the best remaining example, according to Ingrams, appeared in North Pemba.Both islands held a wealth of animal life, including reptiles and fish. The mammals, however, drew the most comment. Monkeys, gazelles, duikers, mongooses and leopards were all noted by British observers, some more favourably than others. While Richard Burton in 1872 described the Zanzibar monkey as ‘small and pretty’ and ‘playful and easily tamed’, he warned that the leopard was ‘destructive in the interior of the island’. McCarthy’s medical work took him through remote natural areas where he encountered many of the plants and animals described by Ingrams and Burton.

Towards the end of this life, McCarthy began an autobiography called ‘A Physician to the Sultan’. Beginning with his childhood and early career medical practice in New Zealand, it then covers his work and life in British East Africa and some parts of his later career in the Pacific. The manuscript includes a wealth of detail about places he visited, people he met, and cases he worked on, suggesting it is likely based on diaries. This article uses McCarthy’s manuscript to identify the significance of his medical profession and New Zealand origin in determining his experience of the East African environment. The first section compares McCarthy’s descriptions of New Zealand and East Africa, and the second examines the role that scientific language and frameworks play in his text. The third section identifies orientalist tropes in McCarthy’s writing and explores the intersection of orientalism and science through a discourse of nostalgia. The final section evaluates the supernatural scenes that appear in ‘A Physician to the Sultan’.

Home always plays a profound role in determining migrants’ experiences of new environments. As Susan Imbarrato writes, ‘authors usually adopt a comparative mode that measures new surroundings against a familiar one’, with home as the principal

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17 Ibid., 22.
18 Ibid., 23.
19 Ibid.
reference point.\textsuperscript{21} Mary Schriber agrees, noting that ‘home’ and ‘abroad’ are the polarities from which travellers construct meaning.\textsuperscript{22} This ‘home’ does not have to be specific. Defined against the ‘other’ of the colonial landscape, it can become a generic trans-imperial standard, with the landscape measured against British World expectations of environments and behaviour. Webs of empire created a shared colonial culture, with particular beliefs, attitudes and rituals that recurred throughout the British Empire.

McCarthy drew on these British World norms in his interactions with the East African environment. He compared Zanzibar to England and shaped his days like countless colonial officials throughout the Empire: attending the colonial club; playing tennis, golf and croquet; and having tea on the verandah, surveying the surrounding landscape.\textsuperscript{23} When McCarthy described ‘sitting out on the lawn, with the fading sunset and a rising moon shining on the whiskey decanter and glasses, and the gin and vermouth bottle reflected in the polished surface of the large Arab copper tray’, he could have been writing from the British Raj, or many other parts of the Empire.\textsuperscript{24}

Yet the influence of McCarthy’s New Zealand origins is also clear. One striking aspect of McCarthy’s manuscript is the continuity between the African and New Zealand environments. No reader could doubt that McCarthy was far more prepared – physically and mentally – for the African landscape than most colonial officials from urban Britain. Key themes through the African sections of McCarthy’s manuscript are isolation and the difficulties of transport; however, these ideas appear almost identically in the New Zealand passages. Take for example the following quotations: ‘The track had been fascined and corduroyed [sic], with teetree

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\textsuperscript{22} Mary Scriber, \textit{Writing Home: American Women Abroad, 1830-1920} (Charlottesville: University of Virginia Press, 1998), 134.


\textsuperscript{24} McCarthy, ‘Physician’, 41.
poles and scrub, but these just seemed to disappear down into the mud'; ‘I don’t think I ever traversed this road without losing at least one shoe from the horse’s hooves'; ‘another very ancient gentleman lived out on the edge of the bush'; ‘they lived ... completely cut off from the rest of the population'; ‘crossing it by night with a flashing torch or a tiny storm lantern, under these conditions was little less than a nightmare’. The first three are from New Zealand and the rest East Africa, but they are almost indistinguishable. Although McCarthy complained about rough and inaccessible African terrain, it was nonetheless familiar.

McCarthy’s presentation of the landscape’s balance between beauty and terror displays similar continuities. The duality of beauty and oppressive isolation in the environment is a common theme in nineteenth century New Zealand novels but McCarthy took this further, juxtaposing beautiful landscapes with their more violent manifestations. The top of Taieri Gorge, which McCarthy noted was his ‘favourite area’, appears as desolate but grand, a place of inner (if not necessarily outer) beauty. Its danger is explained in the next paragraph, which relates how McCarthy was ‘caught in one of Central Otago’s blizzards, and for five days was

Figure Two. Tea in the Garden at Chake Chake, Pemba, 1933.

26 Rebecca Gordon, ‘The Landscape of Empire: The Place of Landscape in Nineteenth Century Colonial Novels’ (MA diss., Victoria University of Wellington, 2010), 28.
27 McCarthy, ‘Physician’, 3A.
holed up in [his] tent with some eighteen inches of snow on the ground’.\textsuperscript{28} Waikawa harbour is described first as ‘lovely’, ‘with little bush clad hills as a green curtain along the edges’ but then revealed to be ‘subject to violent and sudden storms’, ‘in spite of its peaceful appearance’.\textsuperscript{29}

McCarthy’s descriptions of East Africa record the same duality, summed up by his assessment of the region as ‘an attractive but stark, hard ruthless country’.\textsuperscript{30} Numerous picturesque descriptions of Africa appear, typified by McCarthy’s description of Zanzibar’s Grave, Prison and Bat Islands as ‘seemingly suspended above the morning mists above a mirror-like seas, like emeralds about to drop into their quicksilver setting’.\textsuperscript{31} McCarthy wrote ‘it was glorious to hear the cricket’s chirruping sounds and smell the stephanotis perfume hanging on the air and see the stars begin to appear and the brightening moon, the sparkling dew on the lawn and mist on the glasses’.\textsuperscript{32} Such descriptions coexist with African nature’s dangerous side: rough country, inaccessible areas, sudden storms, ‘shallow and treacherous water’ and risk of attack by animals or disease.\textsuperscript{33} Once again, continuity is an essential element of McCarthy’s experience and is driven by exposure to the New Zealand environment.

The absences in McCarthy’s manuscript provide further evidence of continuity between New Zealand and East Africa. The representation of East Africa as a place of unspoiled natural beauty and bounty – a Garden of Eden – has a long tradition in British writings.\textsuperscript{34} English settlers were also frequently shocked by colonial landscapes, unused to such vast areas of seemingly wild and unmanaged land.\textsuperscript{35} They often felt the urge to clear the land,

\textsuperscript{28} Ibid.
\textsuperscript{29} Ibid., 14.
\textsuperscript{30} Ibid., 22.
\textsuperscript{31} Ibid., 23.
\textsuperscript{32} Ibid., 41-41A.
\textsuperscript{33} Ibid., 25-27, 70, 89, 102, 104.
\textsuperscript{35} Sarah Mills, \textit{Gender and Colonial Space} (Manchester: Manchester University Press, 2005), 74.
bringing it under cultivation and ‘civilisation’.  

McCarthy recorded no such reactions. As a young man he spent substantial periods of time exploring the Central Otago high country, and he wrote lovingly of its open spaces and wild state. Large areas of untamed land were neither novel, nor threatening. They were home. Overall, the comparisons that McCarthy drew between New Zealand and East Africa illustrate that New Zealand had a profound influence on his interpretation of the East African landscape.

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Colonial travel writings from the mid-eighteenth century commonly interpreted foreign environments via a scientific discourse. It was a form of interpretation intimately connected to British imperialism. As Elleke Boehmer explains in Colonial and Postcolonial Literature, ‘from the mid-eighteenth century, the European at large in colonial territory had seen himself in the character of the disinterested scientist, the rational and neutral collector of knowledge’. Scientific observation allowed travellers to make sense of new lands, strip them of their otherness and convert them into a familiar Western framework. Placing new landscapes in the global framework of Western science gave the illusion of a coherent British Empire: superficially diverse but fundamentally the same, governable through basic principles. The scientific literary mode also allows the narrator to fashion him- or herself as a benign bystander, separate from violence or exploitation.

While authors without formal scientific training also utilised scientific discourses, McCarthy’s medical education and profession would have made them particularly palatable to him. In ‘A Physician to the Sultan’, McCarthy frequently described the

37 Boehmer, Colonial and Postcolonial Literature, 73.
40 Pratt, Imperial Eyes, 7, 38-39.
East African environment in a scientific mode. When discussing animals he almost invariably used technical descriptions and categorisations, as represented by precise names, measurements and scientific details. Pythons were ‘usually of moderate size ... about 8 to 12 feet to 14 feet in length’.\textsuperscript{41} The fish stocks of Zanzibar ‘consisted of barracuda, which ran up to 70 lbs, perhaps more, and a type of mackerel which rarely exceeded 25 lbs, and a large deep oval shaped fish whose local name was Kambesi, and whose screen-type name belonged to the genus named Scomberomberus’.\textsuperscript{42} McCarthy applied the same neutral, scientific explanations to inanimate features of the landscape. Environmental features are labelled, named and categorised, rendering the unfamiliar explicable and placing them within a rational, scientific framework.

The role that McCarthy’s scientific discourse played in interpreting and familiarising the new landscape becomes even more apparent through the interaction between danger and scientific knowledge. Boehmer stresses that it is vital not to overlook the profound unease that radically new environments induced in officials.\textsuperscript{43} Colonial texts, she argues, are filled with images of nameless and unknowable dangers: vast spaces, impenetrable jungles, and swamps.\textsuperscript{44} McCarthy mitigated the potentially terrifying unknown through science. He drove away the thousands of bats living in his roof with his knowledge of bats’ aversion to light, by installing windows.\textsuperscript{45} He identified that chemical salts of the oasis water in Wajir, Kenya produced crystals in the lower urinary tract and eliminated them with a water treatment system.\textsuperscript{46}

\textsuperscript{41} McCarthy, ‘Physician’, 25.
\textsuperscript{42} Ibid., 65.
\textsuperscript{43} Boehmer, \textit{Colonial and Postcolonial Literature}, 93.
\textsuperscript{44} Ibid., 94; Spurr, \textit{The Rhetoric of Empire}, 94-95.
\textsuperscript{45} McCarthy, ‘Physician’, 122.
\textsuperscript{46} Ibid., 188.
On the very few occasions when McCarthy succumbed to colonial dangers, he highlighted a lack of knowledge as the problem. After a close encounter with three lions, from which he emerged ‘soaked with perspiration’ and in need of ‘a large brandy’, he explained that ‘I had not allowed for the natural curiosity of the cat family, or the fact that these particular cats had not learnt to fear man very greatly’.\textsuperscript{47} McCarthy’s wife Marjorie got ‘the most unpleasant rash all over the exposed parts of her body’.\textsuperscript{48} He eventually discovered that the fine hairs on the leaves of the castor oil plant, blowing into their house from the garden, caused the rash.\textsuperscript{49} McCarthy commented that the area was ‘always producing surprises, mostly surprises due to my ignorance of local things and conditions’ and, with respect to the castor oil plants, used the telling phrase ‘as everyone knows, who knows them’.\textsuperscript{50} It is not nature that causes danger, but one’s lack of knowledge about it. Once he possessed the necessary knowledge, McCarthy easily solved the problem of the castor oil rash. McCarthy’s medical training gave him both specific tools and a framework through which to interpret unknown landscapes, minimising their harms and making them knowable.

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\textsuperscript{47} Ibid., 192.  
\textsuperscript{48} Ibid., 33.  
\textsuperscript{49} Ibid., 33-33A.  
\textsuperscript{50} Ibid., 33.
Alongside his scientific style, McCarthy frequently employed an orientalist mode to describe the African landscape. Acting in a similar manner to a scientific mode, orientalist tropes also familiarise foreign landscapes and subdue colonial unease by painting the African environment in the image of the familiar exotic. Remote from McCarthy’s medical education and New Zealand origin, orientalist images derive from his position within the British World and so within a culture highly familiar with such images. He would have encountered them in popular literature, in art and very likely in English literature classes at school. Zanzibar’s deep cultural links with the Middle East made orientalist images a readily applicable source of cultural knowledge for the island. Indeed, McCarthy described Zanzibar as ‘an Arab Enclave on a primitive African Continent’.51

McCarthy’s writing frequently describes the East African landscape with orientalist rhetoric. On first sight, Zanzibar lay ‘against the rising sun like dark sleeping jade, while to the west were the tiny off-shore satellite island jewels’,52 The Sultan’s palace shone ‘pinkish in the morning light’; tropical fruits were ‘as sweet as honey’, ‘rich with the taste of a confusion of many delicate flowers’ and ‘taste[d] like wild honey scented with geranium and apricots’; Harouni’s tomb, a Persian mausoleum, is described as ‘the ruin of a miniature fairy castle’, white with ‘tall minarets and tiny rooms’.53 East Africa is cast as the familiar exotic ‘other’ of the British imagination, reducing its foreignness.

A crucial element of orientalism is the representation of landscape as intimately and irrevocably tied to the past. For McCarthy, Africa was a place and a personification of history. On his first view of Zanzibar, he wrote that ‘as the sun rose on the old Arab Town with its square angular Arab buildings, it suddenly became real and alive and a piece of living history’.54 Sometimes historic remains prompted McCarthy to imagine vividly their history, recreating scenes of royal figures, rich carved interiors and fragrant gardens. ‘One then can imagine’, McCarthy wrote, ‘him stepping out into the aromatic peacefulness of a garden, tinctured

51 Ibid., 44.
52 Ibid., 23.
53 Ibid., 23, 41A, 100.
54 Ibid., 23.
with the atmosphere of cashew nuts, nutmegs and of other aromatics which would remind him of his native land'. At one point McCarthy went further, imagining the earlier Persian civilisation's tragic end:

One can see in imagination, this great Royal King being stricken with malaria ... and his following carrying his emaciated body on a palanquin ... hurrying to get their loved Chief back to the homeland. But too late, he died and left them. Their last effort before taking to their ships, was to build ... this isolated tomb like fairy castle, which is the only remembrance of, and the last memorial to a loved Leader.

At first glance, these orientalist passages seem antithetical to McCarthy's other dominant mode of writing, that of the detached scientist. Although they serve similar functions – making a foreign landscape explicable by placing it in a Western framework – they appear an unlikely pairing. However, their coexistence becomes more comprehensible when we consider the role of nostalgia. William Bissell establishes three conditions necessary for nostalgia: the sense of a linear historical timeline, with history as irretrievable and tinged with loss; comparisons between the past and present, producing a narrative of decline; and physical remains of the past to which nostalgia can attach. All of these conditions are present in McCarthy's writing.

Bissell also argues that 'nostalgia is a discourse sparked by transition and discontinuity' and thus a distinctive feature of modernity. Nostalgia does not signal a desire to return to the past, but rather, as Bissell puts it, 'speaks of aspiration without possibility'. It is no coincidence, Bissell states, that nostalgia for precolonial societies is usually expressed by those – missionaries, colonial officials, and certainly doctors – employed to change

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55 Ibid., 102.
56 Ibid.
58 Ibid., 211, 223.
59 Ibid., 225-226.
them. Presenting the land as a place of history vanishes present day indigenous cultures and legitimises British colonialism in the region. McCarthy's orientalist sections narrate romantic respect for the past but also make this past dead and irretrievable, left behind by the march of progress. This whiggish historical narrative legitimises McCarthy's modernising activity, which is then expressed through a scientific discourse. Nostalgia makes coherent the two modes of McCarthy's writing.

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The most unexpected aspects of the African sections of ‘A Physician to the Sultan’ are McCarthy’s supernatural discussions and records of paranormal events. The text generally does not offer explanations, and when it does they are supernatural. McCarthy described a ‘figure of an Arab’ who appeared by the head of his bed and then mysteriously vanished. By way of explanation, he wrote: ‘So what was it? I do not know. But Zanzibar was full of ghosts and ghost stories, many of them well documented and well authenticated. Perhaps the fact that these Vuga flats had been erected on the site of an old Arab graveyard, may have had some significance’. He discussed ‘some supernatural agency’ that inhabited the British residency ‘and used to make its presence offensive’. In another house, a phantom grey tabby cat appeared to McCarthy and to ‘all those who occupied that flat either previously or subsequently’.

None of these apparitions were malevolent and they did not particularly alarm McCarthy. Nevertheless, they form a striking contrast to his generally detached and scientific interpretation of the environment. In part, McCarthy’s paranormal experiences are probably a product of their time. Although today spiritualism is primarily associated with the Victorian and Edwardian eras, the movement gained popularity during the inter-war period.

60 Ibid., 224.  
61 McCarthy, ‘Physician’, 33B.  
62 Ibid.  
63 Ibid., 33C.  
64 Ibid., 33D-33E.  
Indeed, both Geoffrey Nelson and Jennifer Hazelgrove pinpoint the 1930s – the period during which McCarthy was stationed in Zanzibar – as the movement’s height. Yet if spiritualist thought was the sole, or even primary, inspiration behind McCarthy’s paranormal discussions, one would expect similar events and descriptions in the New Zealand section of his manuscript.

McCarthy did also describe mysterious events in his New Zealand section, but with a substantial and telling difference from those set in East Africa. Unlike his African supernatural encounters, the seemingly mysterious New Zealand events ultimately possess a rational explanation. One evening McCarthy and two friends were returning from fishing and shooting in the Aparima River, when ‘it appeared in the moonlight, as though the ground was moving towards us like a long wave’. On a trip with two Acclimatisation Society rangers into the Lake Manapouri area, the dogs were roused one night from the campsite, ran into the bush, and returned ‘with their tails between their legs, completely cowed .. and slept close beside us for the next few days’. Although less overtly supernatural, thus far these stories do not differ profoundly to those from Africa. Yet McCarthy then noted that ‘a mild earthquake had been recorded in the same region’ as the earth movement, and suggested that a takahe frightened the dogs at Lake Manapouri. Ultimately, for McCarthy the New Zealand landscape did not possess the same supernatural element as the African landscape, indicating that his mystical passages are a specific response to the African environment.

McCarthy’s orientalist mode could also have encouraged the inclusion of such passages, as the mystical is a common feature of orientalist writing. However, McCarthy typically described paranormal events in language closer to that of the scientific observer than the florid prose of the Orientalist, so orientalism alone seems an insufficient explanation. Contact between McCarthy and East African cultures provides another possible source of influence. Colonial encounters are two-way transfers of

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66 Ibid., 405.
68 Ibid., 9-10.
69 Ibid.
70 Bissell, ‘Engaging Colonial Nostalgia,’ 230.
information, albeit unequal ones. Many African cultures emphasise the spiritual dimensions of landscape, peopling the land with spirits, ghosts and other supernatural creatures.\textsuperscript{71} It seems probable that the paranormal manifestations in McCarthy's manuscript indicate that, while he most often imposed his own worldview onto the landscape, he also absorbed elements of the local environmental understanding.

\textit{Figure Four.} Dennis McCarthy and his daughter Barbara with giraffe on the Athi plains near Nairobi, Kenya, 1934.

McCarthy's utilisation of traditional medicine and close association with local people supports the proposition that he was open to influence by local cultures. McCarthy was friendlier with the local population than most colonial officials. He believed in the efficacy of many traditional East African medical remedies and experimented with them when his own supplies were delayed.\textsuperscript{72} In such practices McCarthy was presumably more liberal than many of his colleagues, as he wrote that 'perhaps this was being referred to when in later years some of my more cynical friends,


\textsuperscript{72} McCarthy, 'Physician', 34A.
were to ascribe to me the qualifications of W.W.D. (White Witch Doctor).\textsuperscript{73} McCarthy developed a close relationship with the isolated communities of the Paje and Mweju districts.\textsuperscript{74} After shooting two leopards that were attacking donkeys in the area, McCarthy noted that he was ‘made more and more a member of this isolated community of some 2000 people, and a close councillor of the Mwalimu himself’.\textsuperscript{75} He also facilitated infrastructure projects in the area, after which the local people remained his ‘very firm friends’ throughout his years in Zanzibar.\textsuperscript{76} This friendship was sufficiently unusual to earn from his European associates the mock title ‘The King of Mweju’, ‘always stated with a touch of gentle sarcasm and derision’.\textsuperscript{77} McCarthy wrote that ‘memories of work and endeavour and friendship with this simple and genuine people of this once lonely outpost ... are among those that make memories worthwhile’.\textsuperscript{78}

It is possible to speculate that McCarthy’s New Zealand origins may have facilitated his openness to local cultures. Unlike the majority of colonial officials, McCarthy had grown up in a country that had both a non-white population and more liberal attitudes towards race than most British colonies. As a practitioner in rural Southland, Maori had accounted for a number of his patients.\textsuperscript{79} Although McCarthy states that he “needn’t say very much about the Maori, most of you know the Maori far better than I do,” he does comment that “we grew up with him and he was part of our general community, the only difference being that he had a brown skin and we in winter time had a white one”.\textsuperscript{80} Although such a view of race relations is idealised, it nevertheless suggests that McCarthy had frequent and positive interactions with Maori as a young man, interactions that could not fail to have influenced his later experiences within the Empire. It is probable that McCarthy’s New Zealand origin facilitated his openness to East African

\textsuperscript{73} Ibid.
\textsuperscript{74} Ibid., 42-45.
\textsuperscript{75} Ibid., 42.
\textsuperscript{76} Ibid., 42-45.
\textsuperscript{77} Ibid., 28.
\textsuperscript{78} Ibid., 45.
\textsuperscript{79} Ibid., 16.
\textsuperscript{80} McCarthy, ‘Polynesia Story’ (unpublished notes, New Zealand, 1970s), 1.
cultures and readiness to absorb elements of their interpretations of environment.

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A close study of Dennis McCarthy’s manuscript illustrates that individual biographical studies are crucial for understanding trans-imperial lives. Not only does such a focus highlight spatial connections throughout European empires, but it also captures the diversity among imperial officials that can be lost in broader studies. McCarthy’s treatment of landscapes reveals that while he did apply British World standards and interpretations to East Africa, his experience of environment was far more complex.

McCarthy’s New Zealand birth and medical profession shaped his interpretation of the East African environment to a considerable degree. Comparisons between New Zealand and East Africa identified many similarities, and McCarthy’s early experiences in the New Zealand back country meant he experienced continuities where colonial officials from urban England would have encountered only the strange and unknown. His medical training encouraged a scientific literary mode and allowed him to mitigate colonial danger through the application of scientific knowledge. It is also probable that his exposure to Maori culture encouraged an openness to local environmental worldviews. Overall, McCarthy’s writing highlights the multi-faceted identities of imperial officials born in the colonies, and the ways in which those identities shaped their environmental experiences throughout the Empire.

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The History of the Phormium Flax Industry in Canterbury

Vaughan Wood

The production of phormium flax fibre, if we include hand dressing of flax by Maori, was one of New Zealand's foundation export industries. The record of New Zealand flax exports goes back to at least 1810, while we can extend European interest in commodifying flax back to observations made by James Cook in 1770, and at a more practical level, to 1793 and the premeditated abduction of the young men Tuki Tuhua and Ngahuruhuru to Norfolk Island on the *Daedalus*, with a view to discerning the secrets of flax working. For centuries before this, of course, Maori women had been producing flax fibre for use both as a textile and as a construction material.

The history of Canterbury's commercial flax industry has nevertheless been a largely Pakeha one, as the ongoing participation of Ngai Tahu on a large scale was effectively precluded after 1848 by their being dispossessed of almost all of their Canterbury lands by the Kemp's Deed purchase. In terms of overall output and longstanding presence in the landscape, the industry in Canterbury was also much less significant at a national level than that of the flax producing regions of the Manawatu and later Southland. The predominance of the latter regions is reflected not just in the historical literature on the industry, but also in the fact that both have their very own flax dressing museum. In the circumstances, it is easy to overlook the fact that

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3 E. Stokes, “Contesting Resources: Māori, Pākehā, and a tenurial revolution”. In E. Pawson & T. Brooking (Eds.), Environmental Histories of New Zealand (Melbourne: Oxford University Press, 2002), 36.
5 The museums in question are the Templeton Flax Mill Heritage Museum in Southland, and the Foxton Flax Stripper Museum in the Manawatu. Among the works published regarding the flax industry in the two regions are B.
for a brief period in the 1870s, Christchurch was New Zealand’s most active centre of flax fibre production.

Within Canterbury, the export trade in flax supplied by Maori began in the late 1820s. Visits had been made by the Sydney vessel *Elizabeth* by 1829, while another Sydney vessel, the *Vittoria*, visited Canterbury to trade in flax in 1831. At the time, there had been interest in the United Kingdom in the use of flax for making rope for naval vessels, and so this was a cause of some excitement among Sydney’s merchant community. However, this British interest faded away in the early 1830s, and with the Maori economy also being ravaged by internal conflict (in which the *Elizabeth* was a not insignificant accessory in the Canterbury context), imports of New Zealand flax into Sydney declined after 1832. In keeping with this broader trend, Canterbury’s flax resource seems to have lost its allure for the Sydney merchants’ after the *Vittoria’s* visit.

It was not until 1852, in the second year of the Canterbury Association settlement, that Pakeha again took an interest in the region’s flax. In March of that year, the *Lyttelton Times* reported that Messrs Beechey and Polhill had left a sample of flax in their office, free of gum and green vegetable matter, which they reckoned three men could prepare a ton of per day. Two weeks later, a correspondent observed that it would take three men a

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7 In 1830, the *Elizabeth* had secretly carried a Ngati Toa war party led by Te Rauparaha to Akaroa, who avenged a previous clash with Ngai Tahu by abducting and slaying the Ngai Tahu chief Te Maiharanui (the rest of his party being either killed or enslaved) and sacking the village at Takapuneke. G. Ogilvie, *Banks Peninsula: Cradle of Canterbury*. (Wellington: GP Books, 1994), 155-156.


9 *Lyttelton Times*, 20 March, 1852: 5.
whole day just to cut the five tons of flax leaf needed to make a ton of dressed fibre, let alone start processing it.\textsuperscript{10} Perhaps unsurprisingly Beechey and Polhill never attempted to make good on their assertion. Instead, it was the partnership of Blakiston and Young that established Canterbury’s first flax mill on the Cam River at Kaiapoi in 1855. The mill relied on percussion to strip out the flax fibre, but little else is known about the operation, which had ceased by 1857.\textsuperscript{11}

No further attempts to establish flax mills in Canterbury were made until the mid-1860s. In the meantime, North Island flaxmillers and merchants had been busy trying to improve on flax dressing machinery, as the squeeze was put on the supply of Maori grown flax by the New Zealand Wars. Between 1861 and 1871, some 28 patents in relation to flax processing were issued, the most significant, in terms of later events, being that granted to Ninnis and Purchas. Like Blakiston and Young, they had adopted percussion, rather than washing in alkaline solutions, to free the flax leaves of gum and mucilage.\textsuperscript{12} The Canterbury mercantile community had initially taken only a passive interest in these industry developments, which is perhaps understandable due to the close proximity of the Otago and West Canterbury gold rushes. In late 1863, however, the firm of Cameron, Donaldson, and Cameron, made up of ex-Wellington millers, announced plans to export gumless flax fibre to the United Kingdom for use in manufacturing paper.\textsuperscript{13} Their Papanui Flax Mill on Christchurch’s Harewood Road was able to start production in 1864, and Cameron’s processed fibre prompted positive comment at the Intercolonial exhibition in Dunedin in 1865.\textsuperscript{14} The business nevertheless seems to have folded after an unsuccessful

\textsuperscript{10} \textit{Lyttelton Times}, 3 April, 1852: 7.
\textsuperscript{12} Sparrow, “The growth and status of the Phormium tenax industry of New Zealand”, 338-339.
marketing demonstration of their solvent-based cleaning method at Port Chalmers in late 1865,\textsuperscript{15} although Donaldson would re-emerge as the inspiration behind the Oamaru-based North Otago Flax Company in 1870.\textsuperscript{16}

In spite of the apparent failure of the Papanui Flax enterprise, the industry was soon put on a firmer footing in Canterbury by James and Egerton Ninnis. The former, whose patent was mentioned above, entered into a partnership with Frederick Jenkins and Frederic Jones, which began cutting flax at Kaiapoi in 1866, and erected the Kaiapoi Flax Works on Sidey Quay the following year. This housed Ninnis’ stripping machinery, powered by a steam engine, in a 28m long shed.\textsuperscript{17} A rope-walk was later added by Jenkins and Jones, but in early 1874 the Canterbury Spinning and Weaving Company, which had taken over the operation, decided wool was a better bet and so the flax mill was transformed into the Kaiapoi Woollen Mills.\textsuperscript{18} James Ninnis, meanwhile, had quickly left the partnership,\textsuperscript{19} and by the end of 1867 Egerton Ninnis had established the equally substantial Halswell Flax Mill alongside the Halswell River upstream from Tai Tapu. Here the stone machine hall contained no less than six Ninnis stripping machines, again steam-powered, with the factory having around 25 employees.\textsuperscript{20}

Over the next five years, a host of new flax mills would be established. Typhoons in the Philippines during 1867 had wreaked havoc with the manila supply for the time being, so there was no shortage of demand from rope-makers for the New Zealand alternative.\textsuperscript{21} In North Canterbury alone, there were

\textsuperscript{15} “The manufacture of flax at Port Chalmers”, \textit{Otago Witness}, 5 August, 1865: 5.
\textsuperscript{16} “Oamaru Flax Company”, \textit{North Otago Times}, 28 October, 1870: 3.
\textsuperscript{19} \textit{Press}, 29 April, 1867: 2.
\textsuperscript{21} Report by J. Knowles, 14 July 1870. “Report from the New Zealand Commissioners relative to the manufacture of New Zealand flax”. \textit{Appendices to the Journals of the House of Representatives} 1870, D-14A: 2
seventeen new flax mills added between 1869 and 1872 (seven at Oxford, three at Rangiora, two at Leithfield, two between Flaxton and Ohoka, and one each at Waikuku, Woodend, and Saltwater Creek). Close to Christchurch, there were several single flax stripping machines operating in the Opawa-Linwood area, another at St Albans, in addition to mills at Styx Mill and on the Heathcote at St Martins (although the latter had to be removed in 1870 because a dam for the mill’s waterwheel was posing flooding problems for a neighbouring house). Further south, there were up to five new mills distributed around the streams and rivers running into Lake Ellesmere, together with one at Charteris Bay in Lyttelton Harbour, while in South Canterbury there were another three at Ōrari, Kakahu, and Milford respectively. Of all these new flaxmills, those that seem to have been the most significant were the Selwyn Flax Company mill at Irwell, which had six-stripping machines, the Ohoka Stream flaxmill near Kaiapoi, in which waterpower drove three stripping machines, Benn and Walker’s two steam powered mills at Leithfield, which

22 Another two were built at Ohoka in 1874. Hawkins, *Beyond the Waimakariri*, 146 & 310. Hawkins also counted Marshall’s rope and flax works at Cust as a new flaxmill, but Marshall grew and dressed linen flax as opposed to phormium flax (Extract from *Lyttelton Times* in *Otago Witness*, 12 March, 1881: 7).
24 These included mills at Sedgemere (M. Patterson, *In Sights of the Lake and Sound of the Sea* (Christchurch: Self-published, 1998), 62), the Selwyn Flax Mill at Irwell (“New Zealand flax”, *Star*, 22 February, 1869: 3), the Burnham flax mill on the Selwyn River (*Press*, 26 June, 1869: 3), and the Kaituna flax works (“Magisterial”, *Star*, 7 July, 1870: 3). It is possible that Joseph Gardiner had by this time commenced his Halswell flax and rope works (I. McBride, *The Paparua County: A Concise History* (Christchurch: Canterbury Public Library, 1990), 37-38), as contemporary bankruptcy notices describe him as a ropemaker of Halswell (*Press*, 9 November, 1869: 3).
had six-stripping machines between them, and Richardson and De Bourbel’s Ashley Gorge mill, which had eight stripping machines. Altogether, some 24 flax mills with 50 machines were recorded in Canterbury by the 1870 census (around one-sixth of the national total), while, as Table 1 shows, the province was of even greater significance when it came to output; the 1531 tons of flax dressed in Canterbury represented one-third of the national total, and was not much less than the output of the next two most productive provinces (Auckland and Otago) put together.

This plethora of new flax mills in the early 1870s was accompanied by a wide range of opinion on the best methods and machines for preparing fibre for the market. For example, in the case on the Benn and Walker mills at Leithfield, three makes of machine (Howarth’s, Anderson’s and Williams’) had been tried before Price’s had been chosen; at De Bourbel’s mill at Ashley Gorge, meanwhile, three different makes (Price’s, Fraser & Tinne’s, and Anderson’s) were being used. In an endeavour to capitalise on the current buoyant position of the industry by resolving some of these questions, the Canterbury Flax Association was established by a meeting of flax mill owners in June 1870. Its object, as elucidated in an advertisement published two days after its formation, was to ‘carefully conduct a series of experiments for discovering the best methods of producing a fibre from the phormium tenax fitted for all purposes of manufacture’.

By acting in this way, the Canterbury flaxmillers were acting in concert with central government, which had appointed Commissioners in late 1870 to investigate, with the help of advice from agents in the United Kingdom, how to produce fibre which best met the needs of overseas markets. Initially the Flax Association had sought to sponsor flaxmillers to report the results

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27 “New Zealand flax”, Star, 22 February, 1869: 3; “Report of the Commissioners appointed to enquire into the preparation of the Phormium fibre or New Zealand Flax. Appendices to the Journals of the House of Representatives 1871, G-4: 64.
28 “Report of the Commissioners ... into the preparation of the Phormium fibre”, 101.
29 Ibid., 64.
30 Press, 4 June, 1870: 3.
31 “Report of the Commissioners ... into the preparation of the Phormium fibre”, vi.
of their own individual experiments, but ultimately it decided to establish its own small flax plantation in what is now Addington, together with its own experimental mill. It also worked, together with Cornelius Thorne of London, who had succeeded in manufacturing textile fabric from phormium fibre, to promote its potential in the British market, and it also supported flaxmillers by sending samples of Canterbury-grown flax to overseas exhibitions.\textsuperscript{32}

The good times, however, could not last. The average export price, having risen from around £15 per ton in 1869 to £25 per ton in 1872, was back down to £18 10s. per ton by 1874, which made mills barely sustainable. During the next 13 years, moreover, the average export price would never rise beyond £20 11s, and would drop as low as £14 6s.\textsuperscript{33} The revival of the manila hemp trade played a part in these depressed prices,\textsuperscript{34} but the rapid expansion of the New Zealand industry in the early 1870s had both glutted the market for New Zealand fibre and also lowered the overall quality of the product.\textsuperscript{35} Naturally there was a contraction in the industry, although the market correction was prolonged by investors in loss-making mills hanging on in the hope of a revival in prices, rather than cutting their losses. In Canterbury, the number of operating flax mills (Table 1) had dropped to just two by 1877, production had similarly fallen by about 90 per cent. Some flax mills were converted for other purposes, like the Ashley Gorge flax mill which became a saw mill,\textsuperscript{36} or the Jenkins & Jones mill at Kaiapoi, which transitioned, as described earlier, into a woollen mill. Some mills had always been dual purpose, such as


\textsuperscript{33} “A revived industry”, \textit{Otago Witness}, 21 March, 1889: 6. According to one of the Canterbury respondents to a survey of flax mills in 1890, flax dressing would not pay if the price was less than £18 f.o.b. at Lyttelton (“Manufacture and growth of phormium or flax (Report on the)”. \textit{Appendices to the Journals of the House of Representatives} 1890, H-36: 6)

\textsuperscript{34} “New Zealand hemp”, \textit{Colonist}, 26 March, 1874: 3.


\textsuperscript{36} Hawkins, \textit{Beyond the Waimakariri}, 113.
Table 1: The flax industry in Canterbury compared with NZ, 1870-1915

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of flax mills operating</th>
<th>Output of dressed flax (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Canterbury</td>
<td>NZ</td>
</tr>
<tr>
<td>1870</td>
<td>24</td>
<td>161</td>
</tr>
<tr>
<td>1873</td>
<td>11</td>
<td>110</td>
</tr>
<tr>
<td>1877</td>
<td>2</td>
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<td>1880</td>
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<td>1885</td>
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<td>1890</td>
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<td>1895</td>
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<td>52</td>
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<tr>
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<td>101</td>
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<tr>
<td>1905</td>
<td>8</td>
<td>240</td>
</tr>
<tr>
<td>1910</td>
<td>3</td>
<td>81</td>
</tr>
<tr>
<td>1915</td>
<td>2</td>
<td>76</td>
</tr>
</tbody>
</table>

*The 1915 output figure was combined for Canterbury and Westland.

Sources: “Report of the Commissioners appointed to enquire into the preparation of the Phormium fibre”, p 101; Results of a Census of the Colony of New Zealand, taken for the night of 1st of March of 1874 (Wellington, Government Printer, 1875), p 269; Results of a Census ... 1st of March 1878 (1880), p 345; Results ... 3rd April 1881 (1882), p 300; Results ... 28th March 1886 (1887), p 342; Results ... 5th April 1891 (1892), Appendix A, p xxvi; Results ... 12th April 1896 (1897), Appendix A, p xxvi; Results ... 31st March 1901 (1902), Appendix A, p xxxi; Results ... 29th April 1906 (1907), Appendix A, p xxxi; Results of a Census of the Dominion ... 2nd April 1911 (1912), Appendix E, p xi; Results ... 15 October 1916 (1918), Appendix D, p lxix

Stonyer’s flax and flour mill at Ohoka,37 so for them it would have been a relatively easy change to make. Others were broken up due to financial failure, such as the Selwyn Flax Works,38 while still others were removed from production by natural attrition, among them Eckersley’s mill at Ohoka which was badly damaged in a fire.39 As for the Canterbury Flax Association, it had wound itself

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37 “Report of the Commissioners ... into the preparation of the Phormium fibre”, 64; Hawkins, Beyond the Waimakariri, 146.
38 Press, 7 December, 1871: 4.
39 Hawkins, Beyond the Waimakariri, 146.
down from 1874, completing the process in January 1875,\textsuperscript{40} and so had not been around for long enough to make any significant contribution to the industry.

Renewed fears about the level of the manila supply, and the emergence of twine as another product that could be made with phormium flax fibre, pushed the London price up to as much as £40 per ton at the end of the 1880s, and thus brought about a revival of the local industry.\textsuperscript{41} Indeed, across New Zealand as a whole, 138 flax mills were reportedly established in 1889.\textsuperscript{42} During 1890 the 16 flax mills in Canterbury produced an unprecedented 2125 tonnes of dressed flax, but even this was not much than one-seventh of national output.\textsuperscript{43} This revival was only short-lived though, and by 1891 mills in Canterbury were back in the position of having to either cut production or close altogether.\textsuperscript{44}

The industry then experienced a second, more sustained boom at the end of the 1890s, brought about by the disruption to manila production caused by the Spanish-American War of 1898. The government was keen to ensure the industry made better use of this opportunity, appointing a flax grader in 1901, and making such grading compulsory via the Flax Grading and Export Act 1901, which gave overseas buyers for the first time some level of certainty that they were buying a quality product.\textsuperscript{45} In the wake of such grading, the price of New Zealand flax fibre in London was back up to £30 to £36 per ton during the middle of the decade.\textsuperscript{46} Across the country, the industry went on to reach its zenith, with 240 mills producing some 22,148 tons of dressed flax in 1905. In spatial terms, this resurgence between 1899 and 1907 was quite

\textsuperscript{40} “Canterbury Flax Association”, \textit{Star}, 18 July, 1874: 3; “Canterbury Flax Association”, \textit{Star}, 23 January, 1875: 2.


\textsuperscript{42} “Manufacture and growth of phormium or flax (Report on the)”, 2.

\textsuperscript{43} \textit{Results of a Census of the Colony of New Zealand, taken for the Night of the 5th April 1891} (Wellington: Government Printer, 1892), Appendix B, xxvii

\textsuperscript{44} D.N. Hawkins, \textit{Rangiora: The Passing Years and People in a Canterbury Country Town} (Rangiora: Rangiora Borough Council, 1983), 250.

\textsuperscript{45} Atkinson, “Phormium tenax”, 85.

\textsuperscript{46} “The fibre industry”, \textit{New Zealand Herald}, 19 November, 1906: 8; “Slump in flax”, \textit{Auckland Star}, 22 October, 1907: 5
uneven though. In 1905 the output from Wellington Province, which included the Manawatu flaxmills, among which was the largest in New Zealand, was 7524 tons; at the same time, however, Canterbury’s eight flaxmills only produced 784 tons, or about one-third of their 1890 figure.

Leech’s mill on the Cam River in Rangiora was one of the few 1870s flax mills which had survived the depression years in the industry, while among the other leading mills during the second boom period were the mills at Woodend and Westerfield (near Ashburton) owned by members of the Chinnery family, the Southbrook mill (owned first by James Seed and later by Charles Withers), and the Waikuku mill owned by J.P. Andrews. As in the earlier boom, several of the smaller mills associated with the 1880s and 1890s upturns in the industry only had a fleeting existence. One such mill was William Mardon’s mill at Riccarton, established on the Avon River just above the Ilam site now occupied by the University of Canterbury; after being sued for polluting the Ilam homestead’s water supply in 1889, and having had much of the mill burnt down in 1890, Mardon went bankrupt in 1892.

This second boom in the industry’s history came to an emphatic end in 1908. Unused supply from the previous year’s flax fibre production, together with bumper seasons for manila in the Philippines and sisal in Central America, and reduced demand for twine caused by poor northern hemisphere grain crops, combined to cause a £15 per ton crash in the price of New Zealand flax compared to the year before. As a consequence, New Zealand had only 81 flax mills by 1910 (barely one-third of the number

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48 Results of a Census of the Colony of New Zealand, taken for the night of 29th April 1906 (Wellington: Government Printer, 1907), Appendix A, xxxi
49 Cyclopaedia of New Zealand: Volume 3: Canterbury and Provincial Districts (Christchurch: The Cyclopaedia Company, 1903), 469.
51 “Supreme Court”, Press, 5 February, 1889: 3; “In Re William Mardon, Riccarton, Flax Dresser”, Star, 29 August, 1892: 3
five years earlier), and the number in Canterbury was down to three, although it should be said that tonnage of dressed flax produced in Canterbury by these three mills was greater than that produced by the eight mills in 1905. The industry in Canterbury never recovered, and by 1927 the sole stand-alone mill in operation was McDonald’s at Southbrook, although Andrews’ twine works at Waikuku (formerly the Waikuku Flax, Rope and Twine Works) also used flax in its production. The McDonald mill was then purchased by Andrews in the 1930s, but whereas the mill subsequently closed down, its Southbrook farm remained a source of flax for the twine works. The latter continued to process flax through into at least until the 1960s. It eventually became one of the arms of the Donaghy’s textile business, and was closed in 1987.

Looking back on the history of dressed flax production in Canterbury, the standout feature was its transient nature. A highly volatile market driven by strong competition from foreign alternatives to flax fibre resulted in dramatic fluctuations in the size of the industry between the 1860s and 1920s. The timing of the peaks in demand for flax fibre, relative to the expansion of close settlement, was a key factor in this transience. The long recession in prices from the early 1870s to the late 1880s would have given little incentive for Canterbury landowners to wait the five years or so needed for new growth to replace what had been cut, before converting their holding into agricultural fields;

53 Results of a Census of the Colony of New Zealand, taken for the night of 29th April 1906 (Wellington: Government Printer, 1907), Appendix A, xxxi; Results of a Census of the Dominion of New Zealand, taken for the night of 2nd April 1911 (Wellington: Government Printer, 1912), Appendix E, ciii.
consequently, the industry in Canterbury was in practice extractive, even though the plants themselves were a renewable resource. This was in stark contrast to the situation in the Manawatu, where flax millers were still able to exploit, through lease or purchase, hundreds and even thousands of acres of natural flax-producing wetlands at the turn of the century.57 This placed the more permanent Canterbury flaxmillers in an unenviable position, as on the one hand they were under pressure to deliver a processed product more suitable for overseas markets, which usually required investment in improved machinery, while on the other hand they would have faced competition from cheaper, and most likely inferior, fibre from ‘cut-and-run’ operators who probably had little concern for maintaining the quality of their product or security of supply in the long-term. Ultimately, the most telling limitation for the industry, although its effects may have been felt in Canterbury earlier than in other regions, was that phormium flax fibre never achieved the sort of prestige status in international markets that New Zealand’s agricultural success stories, such as kiwifruit, have been able to attain. Thus even when it became highly rationalised, as was seen in the post-1905 period in Canterbury, the industry was never likely to be more than a supplementary supplier of fibre.

57 See, for example, Marjorie D. Law, From Bush and Swamp: The Centenary of Shannon 1887-1987 (Palmerston North: Dunmore Press, 1987), 100-102
REVIEW:


Paul Star

A few years ago, when he and I both attended committee meetings of Forest and Bird’s Dunedin branch, Alan Mark told me he was writing this book and said (with a chuckle) that he might call it *Mark My Words*. Its eventual title, *Standing My Ground*, still emphasises the personal nature of the volume, yet the text is often anything but autobiographical. For the most part, it is not nearly so much about Mark as about the cause to which he has devoted his life: his words about ‘his’ ground, rather than about himself.

Mark’s ground is the natural environment of Otago, of South Island, of New Zealand, and his mission, as the book’s subtitle indicates, has been to promote its conservation. In the epilogue, Mark acknowledges ‘the unwavering support of my own family members throughout all my ecopolitical activities, though some have commented on the price in terms of discretionary time able to be spent with the family’ (pp 258-9). At its launch, one speaker observed that this book ‘looks at what it truly means to [be] the critic and conscience of society’ (*Otago Daily Times* 29 October 2015). In Alan Mark’s life it has meant the single-minded pursuit of a perceived social ‘good’ – the retention of indigenous environments – not an emphasis on himself, except insofar as his career has reflected his greater purpose. This, in turn, has determined the subject matter of his book, which details what Geoffrey Palmer, in the foreword, calls ‘a life in science for the public interest’.

Chapter 1 is unlike the rest, since it describes Mark’s ‘formative years’, born into a low-income Dunedin family’ and before his direction in life was clear. Financial constraint and opportunity, rather than initial inclination, meant that he studied science subjects at Otago University rather than agriculture at Lincoln, then concentrated on plants rather than animals. The encouragement and support of Professor Geoff Baylis of Otago’s
botany department held a particular significance. He describes his
time as a Fulbright fellow at Duke University in North Carolina,
then his return to Dunedin in 1968 as an Otago Catchment Board
employee researching high country tussocklands.

When it became clear that the Board was more interested in
surveys of these ecosystems assessing their capability than in his
advice on their responsible management, Mark was relieved to
move on to a three year fellowship with the Hellaby Indigenous
Grasslands Research Trust (the subject of Chapter 2). This meant
he could continue with the same field of research but within an
organisation specifically emphasising ecological sustainability. At
the same time, Mark was assured of a secure future, since Baylis
had arranged for his appointment as lecturer in his department,
teaching to commence when the Hellaby Trust fellowship ended.

It is striking that, once this much is recorded, Mark neglects to
state that he remained a member of Otago’s botany department
for the rest of his professional life and beyond, retiring in 1998
(and he has continued active ever since, as professor emeritus).
The blurb on the back of the book gives us this information, but
not the book itself. Only in Chapter 8, entitled ‘Other Research
Activities’, does Mark specifically describe some of the academic
work he has undertaken in concert with his students, notably on
the forest ecology of Southland and the West Coast; and only in
the three-paragraph epilogue does he have anything to say about
his private life during the last half century or so. The other
chapters (3, 4, 5, 6, 7, 9) are all exclusively about environmental
campaigns and organisations, in most of which he has played a
major part.

Chapter 3, on ‘The South Island High Country’, demonstrates how
Mark’s research led directly into his activism. ‘It became obvious ...
’, he writes, ‘when working for the Otago Catchment Board and
the Hellaby Research Trust – that the lack of any tussock
grassland reserves in the entire South Island high country meant a
serious absence of any baseline reference areas ... I took it upon
myself to attempt to correct this serious situation’ (p 63). Chapter
2 detailed his controversial findings that tall snow tussock
increased water yield, with the implication that persistent
burning, shorter tussock and greater stocking, often meant
environmental degradation. This led Mark to call for a scientific reserve at Maungatua (established in 1967), further scientific reserves in the Otago tussocklands in the 1970s, and finally a series of conservation parks in Otago and other South Island conservancies in the early 2000s.

Chapter 4 focusses on ‘The Nardoo Tussock Grassland Debate’ of the 1970s and 80s, when Mark and other concerned ecologists failed to stem the destruction of part of this catchment (though Te Papanui Conservation Park was eventually established, in 2003). Mark indicates that this failure made him aware of ‘the political impotence of a small group of scientists’ when unassisted by ‘the political clout that such an organisation [as the Royal Forest and Bird Protection Society of New Zealand] clearly had’ (p 93). His subsequent and increasingly close involvement with ‘Forest and Bird’ is discussed later in the book.

Given the need for some sort of chronological unfolding of events, Mark deals first (in Chapter 5) with his contribution to the ‘Save Manapouri’ campaign, which successfully opposed the raising of the water level of Lake Manapouri, beyond its natural range, for hydroelectric power generation. The boundaries of acceptable development were effectively defined by over a quarter of a million signatures against the National government plan, gathered in a Forest and Bird petition in 1970, and the subsequent election of a more conservation-oriented Labour government in 1972.

The background to the Manapouri campaign has received considerable analysis, ranging from Neville Peat’s Manapouri Saved! New Zealand’s First Great Conservation Success Story (1994), to Aaron Fox’s 2001 PhD thesis, ‘The Power Game: The Development of the Manapouri-Tiwai Point Electro-Industrial Complex’. Mark now chronicles his own role, which began with supervision of a 1969 assessment of the environmental impact of raising the lake and his submission (as an expert on lakeshore ecology) to the Manapouri Commission of Enquiry. His decision to record, as a participant, his perspective on events such as this campaign, will be of great value to future researchers. He also highlights, in his account, the subsequent appointment by the Labour government of a group of Guardians of Lakes Manapouri
and Te Anau, whose meetings he chaired for 26 years and who continue to oversee the sustainable management of these lakes.

Collectively, the Guardians constitute a quasi-autonomous non-governmental organisation or ‘quango’. Chapter 6, entitled ‘Quangos I Have Known’, discusses his involvement with several more. These include the National Parks and Reserves Authority (1981-90), the Environment Council’s Taskforce on Wetlands (1982-3), the Otago Conservation Board (1990-2001), Fiordland Marine Guardians (2001-13), and the New Zealand Conservation Authority (since 2001). Even this incomplete list, without further comment, is suggestive of the extent and diversity of Alan Mark’s contribution to environmental management.

At last, in Chapter 7, we are treated to a full account of Mark’s role in Forest and Bird, the oldest and largest independent environmental association in New Zealand. Aware of both Forest and Bird’s worth and his own, he ‘considered that the society might benefit from scientifically credible inputs to its conservation proposals’ (p 171), such as it had in 1930 when the pioneer plant ecologist, Leonard Cockayne, was its president. He was also influenced by the more immediate precedent provided by the ornithologist and geologist Charles Fleming, who similarly served on the Forest and Bird executive and was Mark’s ‘most important peer and mentor’ (p 131) as a scientist voicing opposition to the raising of Lake Manapouri. Since coming to prominence over the Manapouri debate, it is perhaps Mark’s active commitment to Forest and Bird (serving on its national executive in 1979-97 and as president for 1986-91) that has kept him most influentially in the public eye.

Some future scholarly history of Forest and Bird should clarify exactly what influences led the society, from the late 1970s onwards, to extend well beyond its earlier and continuing focus on the conservation of native forests and native birds. Mark identifies ‘a concerted effort [within Forest and Bird] to diversify its activities into a range of non-forest indigenous ecosystems, particularly wetlands, shrublands and tussock grasslands’ (p 173) – which are also the areas to which he has directed much of his research. He notes that his ‘first presidential duty was to become a signatory to the West Coast Forest Accord’ (p 178) and refers to
the creation, within his time, of Paparoa National Park (1987) and
recently, while one of three Forest and Bird ‘ambassadors’, he
played a prominent part in the unsuccessful bid (2011-13) to
prevent extended coal-mining on the Dennistoun Plateau. All these
campaigns have attracted intense interest nation-wide. Less
attention has been paid to the more parochial concerns of the
Dunedin branch of the Society, to which Mark has also devoted
time and energy. He writes in particular of the branch’s wilding
tree control programme, which has significantly restrained the
invasion of Otago landscapes by exotic pine species.

Unlike a quango, an environmental non-governmental
organisation or ‘ENGO’ functions without direct government
involvement. Forest and Bird is one such ENGO; Chapter 9
discusses others that Alan Mark has known. Here we get his take
on the Native Forest Action Council and in particular on its Maruia
Declaration of 1975. He also discusses, among his other
involvements, the Save Aramoana Campaign (1974-84), which he
assisted by stressing the ecological values of the saltmarsh beside
Otago Harbour. This lies right next to where the proposed
aluminium smelter was to have been built, and since 1994 has
been designated the Aramoana Ecological Area.

Viewed as an account of the author’s involvement in many
environmental battles over a fifty year period – and, often, as a
summary of the battles themselves – this book is excellent. It is
also an astonishing and inspiring example of just how much one
person, given energy and dedication, can contribute. I have
several times heard Alan Mark say that ‘one does what one can’,
and certainly in his case this is very true. He concludes rather
bleakly, however, that, ‘For all my efforts, major deteriorations
continued before my eyes. Despite significant progress in recent
decades, conservation and sustainable resource management
continue to push against this prevailing wind of decline. It seems
that nature conservation is mostly about reducing the rate of loss:
there are very few real gains to be made’ (p 227). Not that this
has ever stopped Mark trying. The final pages of the book deal
with his co-founding, when aged around eighty, of Wise Response
Inc., a group which has recently (and, so far, unsuccessfully)
lobbied parliament to undertake a national risk assessment of
economic, energy and climate security in the light of climate change.

Standing My Ground has been well-produced by the University of Otago Press, which in recent years has published an increasing number of books on themes of interest to conservationists, environmental historians and nature-lovers. I also note their publication this year of a new edition of Stewart Island: Rakiura National Park by Neville Peat. This is an attractive and useful introduction to New Zealand’s third island, which still displays a range of those distinctly indigenous environments treasured by Mark, Peat, and so many other New Zealanders.
RECENT PUBLICATION:


This handy guidebook to Stewart Island is written by the author of *Stewart Island: The Last Refuge* (1991) and more recently *Rakiura Heritage* (2014). An earlier edition of the guidebook was published as *Stewart Island: A Rakiura Ramble* in 2000, but it has now been completely revised and redesigned, and thus takes in developments such as the creation of Rakiura National Park in 2002. It is richly illustrated with more than 70 colour photographs, as well as colour maps of the island and the Halfmoon Bay / Paterson Inlet area, and has a comprehensive index, together with suggestions for future reading. While visitors will benefit most from the sections on walks and tramping, the fourth chapter (‘A Rare and Special Nature’) provides a concise overview of Stewart Island’s wildlife and conservation history, and there are also interesting snippets of settlement history throughout.