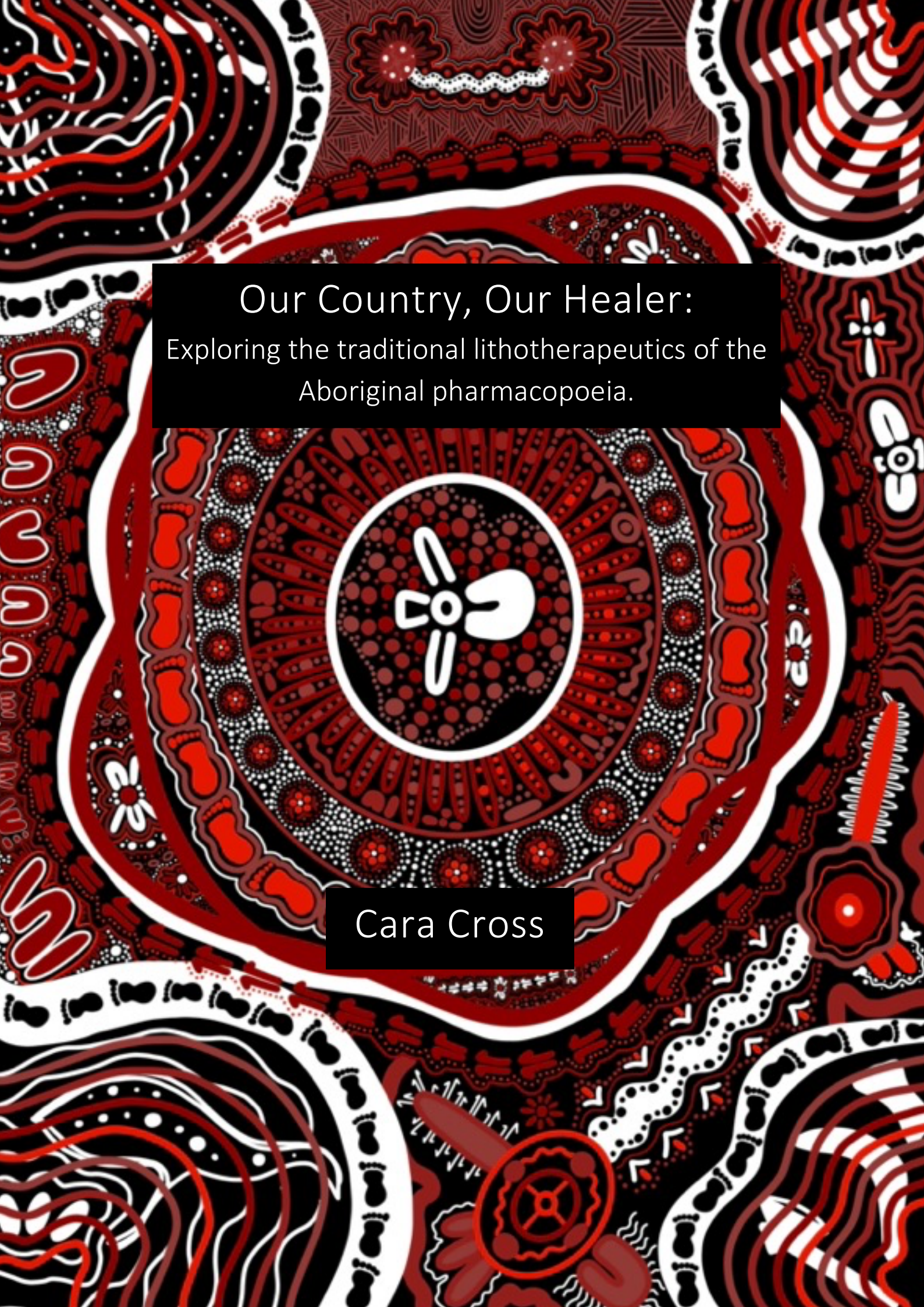
Our Country, Our Healer:

Exploring the traditional lithotherapeutics of the Aboriginal pharmacopoeia.



Cara Cross

Aboriginal and Torres Strait Islander readers are respectfully advised that this thesis contains the names and images of deceased persons.

Our Country, Our Healer:
Exploring the traditional lithotherapeutics of the Aboriginal pharmacopoeia.

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Thesis submitted in fulfillment of the requirements for the award of the degree of

Doctor of Philosophy in Aboriginal Studies

The Wollotuka Institute

The University of Newcastle

Australia

February 2023

Aboriginal and Torres Strait Islander readers are warned that this thesis may contain images of deceased people.

"Healing is part of life and continues through death and into life again.

It occurs throughout a person's life journey as well as across generations.

It can be experienced in many forms such as mending a wound or recovery from illness.

Mostly however, it is about renewal. Leaving behind those things that have wounded us and caused us pain. Moving forward in our journey with hope for the future with renewed energy, strength, and enthusiasm for life. Healing gives us back to ourselves. Not to hide or fight anymore. But to sit still, calm our minds, listen to the universe, and allow our spirits to dance on the wind. It lets us enjoy the sunshine and be bathed by the golden glow of the moon as we drift into our dreamtime. Healing ultimately gives us back to our Country.

To stand once again in our rightful place, eternal and generational."

Dr Helen Milroy

MB BS CertChildPsych W.Aust., FRANZCP

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Acknowledgment of Country

I acknowledge the Traditional Owners of Country throughout Australia and recognise the connection to lands, waters and communities that continues today. I specifically acknowledge and thank the Traditional Owners of the sacred healing sites that are the focus of much of this thesis, being the Worimi and Wonnarua people and the Traditional Owners of the lands upon which I live and work, the Wallumattagal people of the Dharug nation.

It is with immense gratitude that I both acknowledge and thank the Aboriginal people who have supported and participated in this work. Truth telling about our history shines a light on colonial dispossession, the displacement of Aboriginal people and the devastating consequences of colonisation. Truth telling in this case evidences the contribution and complexity of the Aboriginal and Torres Strait Islander environmental, scientific and medicinal knowledges that made this work possible.

I am a healer like my ancestors. May the truth telling in this work serve to help heal the wounds of the past which remain present for both Aboriginal and non-Indigenous people who now call this continent home. I would like to acknowledge Aboriginal people as the First Scientists, First Chemical Technologists and First Pharmacists and believe this recognition is an important part of our identity as Aboriginal people. Finally, I pay respect to Elders past and present while acknowledging the continuing strength and resilience of Aboriginal and Torres Strait Islander peoples and cultures.

Statement of Originality

I hereby certify that the work embodied in the thesis is my own work, conducted under normal supervision. The thesis contains no material which has been accepted, or is being examined, for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made. In chapters two and three of this work I have drawn upon my own previously published research which discusses the sacred healing site of Burning Mountain and the medicines created from its mineral ore.[1] I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968.

Signed: Cara Cross

Dated: 1 January 2023

[1] Cara Cross, "Our Country, our healer: Aboriginal apothecaries of Burning Mountain", *Aboriginal History* 45 (2021): 83-108.

Statement of Government Support

This research was supported by an Australian Government Research Training Program (RTP) Scholarship.

Terminology

Within this thesis I have aimed to use appropriate terminology. I recognise that language use and meaning is constantly changing and as such my position on terminology is also dynamic. Current practice is to use the term Aboriginal and Torres Strait Islander when referring to the Indigenous people or communities across the continent now called Australia. I use the term Aboriginal when I refer to Aboriginal and Torres Strait Islanders everywhere in Australia. In reference material I have quoted from directly, where the word 'Aboriginal', 'Aborigine' or 'Indigenous' was written in all lowercase I have capitalised the first letter, denoting this change from the original text by using brackets around the first letter, e.g. [A]. As the terms "Aboriginal" and "Torres Strait Islander" are collective terms that do not emphasise the diversity of languages, experiences, cultural practices, and worldviews held by the people that they refer to, I use the specific nation and/or *nurra* on advice from local Elders where possible. I use the term Indigenous when referring to First Nations peoples globally except where a more specific term is appropriate, such as Māori when referring to Indigenous people from New Zealand.

Abstract

Aboriginal people of the Greater Hunter region of New South Wales had access to two exceptional geological formations, which provided them with access to valuable mineral resources. This thesis documents the production and trade of traditional Aboriginal lithotherapeutics (mineral medicines) and contributes to filling the gap that exists in our knowledge of the non-botanical medicines of the Aboriginal pharmacopoeia. This thesis explores the Aboriginal use, manufacture, and trade of these locally produced mineral medicines and the impact of colonisation on these important cultural practices.

Acknowledgements

Importantly I would like to acknowledge and thank my four children, Taj, Ash, Aja and Mataya for their unconditional love and unending support (and for bringing me countless cups of tea). My children were my inspiration for my embarking on this PhD journey and over the years of researching and writing this thesis they accompanied me to sacred sites, historical societies, libraries and archives and on visits to Elders, family and various community members. Throughout the writing of this thesis, we together faced the challenges of domestic violence, and the consequences of the financial and post-separation abuse stemming from it, including being forced out of our family home and having to flee another home for fear of our safety. Aboriginal people are strong, staunch, resilient and are no strangers to adversity, however if these hardships and difficulties brought us any silver lining, it was that it served to strengthen the deep bonds we already shared. When looking back at the struggles in my personal life that existed as I brought forth this body of work, I am deeply grateful for my children. I am in awe of the amazing young men and women they have become, and I truly hope that I have made them proud.

When I think of my children, it is with both admiration and appreciation. In these moments my thoughts travel to my ancestors and my heart fills again with immense pride. As I was writing this thesis, I carried with me a deep feeling of responsibility to the ancestors along with a keen awareness that this work will be a source of important cultural knowledge for the generations to come. May the generations of today and tomorrow be filled with a sense of identity and pride in the knowledges and contributions of those who walked Country before them.

I would like to acknowledge my family and friends for their love, inspiration, support, and for their patience as this PhD thesis consumed so much of my time.

Thank you to my brilliant supervisors for their direction and shared knowledge. I cannot express how thankful I have been throughout my PhD journey, and will always be, for such an incredible supervisory trifecta! I will be forever grateful to Emeritus Prof. John Maynard for his encouragement, mentorship, enthusiasm, and advice. A special thank you to Dr Ray Kelly for his support and guidance, particularly around Aboriginal language and the nuances of meaning found within, and to Prof. Victoria Haskins for her encouragement, assistance with my writing and editing, professional input, and for allowing me to draw upon her wealth of historical knowledge.

To my colleagues at Macquarie University, including the Djurali Aboriginal and Torres Strait Islander Health Research and Education Team, the team at Walanga Muru and my colleagues across the academy - I truly value your ongoing friendship, collegiality, and your support of this research, in particular I would like to thank Uncle Boe Rambaldini, Dr Leanne Holt, Dr Kylie Gwynne, Prof. Cath McMahon, Dr John Skinner, Dr Connie Henson, Dr Joe Fraser, Dr Joe Perry, Dr John Hunter, Noeleen Lumby and David Meharg.

I wish to personally thank those from the Carr and Hall families and their descendants, in particular Mary and Brian Jackson, for their ongoing support, generosity, and contribution to this research. I also wish to extend my love and thanks to members of the Mayers family and their descendants who generously gave their time, advice, support, and resources to further this work, some doing so even whilst facing their own health challenges.

To all the people throughout the course of my life that have inspired me, believed in me, and contributed to my personal growth which has enabled me to be where, and who, I am today – I thank you.

This thesis is dedicated to all Aboriginal and Torres Strait Islander people. May we take pride in being the oldest surviving continuing culture on this planet whose cultural knowledge includes Aboriginal lithotherapeutics as part of an extremely vast and efficacious pharmacopoeia.

Definitions

adsorb: adsorption is the process by which a solid holds molecules of gas or liquid or solute as a thin film; the adhesion of a chemical species onto the surface of particles.

alum: a colourless astringent compound which is a hydrated double sulphate of aluminium and potassium, or any of a number of analogous crystalline double sulphates of a monovalent metal.

ameliorate: to make better, or more tolerable.

apothecary: a person who prepared and sold medicines and drugs.

barcoo rot: the slowest healing skin wound due to scurvy, caused by a settler diet predominantly made up of billy tea and damper; an ulcerous skin condition.

beneficiation: in the mining industry, beneficiation is any process that improves (benefits) the economic value of the ore by removing the gangue minerals, resulting in a higher-grade product.

botanicals: a substance obtained from a plant used medicinally.

Bumban:	a high initiation ceremony of the Worimi: the making of the *karadji*.
calcination:	is a thermal treatment process in the absence, or limited supply of, oxygen or air applied to ores to bring about thermal decomposition; can also refer to heating to high temperatures in air or oxygen.
carbuncles:	a severe abscess or multiple boils in the skin, typically infected with staphylococcus bacteria.
chemist:	person involved in chemical research or experiments.
coagulant:	a substance that causes blood to coagulate, to change to a solid, or semi-solid, state.
contagion:	disease spread through close contact; the communication of disease from one person, or one organism, to another.
combustion:	the process of burning something.
efflorescence:	the migration of a salt to the surface, where it forms a coating.

empirical:	based on, or concerned with, or verifiable by observation or experience, rather than theory or logic.
ethnobotany:	the scientific study of the traditional knowledge and customs of a people concerning plants and their medical, religious, and other uses.
ethnopharmacognosy:	the scientific study of ethnic groups and their use of crude drugs from plants, animals, microbes, and minerals.
ethnopharmacology:	the scientific study of ethnic groups and their use of pharmaceuticals; encompassing the study of the pharmacological qualities of traditional medicinal substances.
excoriation:	a place where your skin is scraped, grazed, or abraded.
fermentation:	the chemical breakdown of a substance by bacteria, yeasts, or other microorganisms, typically involving effervescence and giving off heat.
gangue:	the commercially valueless material in which ore is found.
geophagy:	the practice of eating earth, clays, and charcoal.
hydrolyse:	break down (a compound) by chemical reaction with water.

karadigan: a doctor, a healer that works with beneficial forces in the world.

karadji: An Aboriginal medicine man or woman, also spelled *kurdaitcha, gadaidja, cadiche, caradjee, kadaitcha, kadija* or *wirrigan/wirrigen.* Although language in this thesis may use past tense when describing *karadji,* this is simply to denote the specific *karadji* operating within the time and space being considered. I acknowledge that *karadji* are still practicing today in the traditional ways.

karaga: To use your voice meaningfully.

kaolin: a fine soft white clay, resulting from the natural decomposition of other clays or feldspar.

kaolinite: a white or grey clay mineral which is the chief constituent of kaolin.

kopi: the Aboriginal word for calcium sulphate, or white gypsum, a sulphate mineral.

levigation: to grind into a smooth powder, or with the addition of water, a smooth paste.

lithotherapeutics:	mineral medicines. From the Greek words "*lithos*" (Greek: *stone*) and "*therapeia*" (Greek: *healing*) denoting healing from stones or crystals.
lixiviate:	separate (a substance) into soluble and insoluble constituents by the percolation of liquid.
microbial:	relating to or characteristic of a microorganism, especially a bacterium causing disease or fermentation.
montmorillonite:	an aluminium-rich clay mineral of the smectite group.
mullite:	a rare clay mineral, a colourless mineral consisting of aluminium silicate in orthorhombic crystalline form.
Mycenaean period:	The culture that dominated mainland Greece, the Aegean islands, and the shores of Asia Minor (circa 1600-1100 BCE) during the late Bronze Age is referred to as the Mycenaean period.
nambi:	sacred Worimi waterhole with life-giving, curative properties.
nurra:	used to describe a clan group within a larger Aboriginal nation, *ngurra* being the Gathang word meaning camp

ophthalmic:	of, or relating to, the eye.
ore:	a naturally occurring solid material from which a valuable mineral, or metal, can be extracted profitably.
pharmacist:	person professionally qualified to prepare and dispense medicinal drugs.
phytochemical:	any of various biologically active compounds found in plants.
pharmacopoeia:	from the Greek '*the art of preparing drugs*'. A book or a listing of official medicinal drugs, including directions for their use; the Aboriginal pharmacopoeia refers to Aboriginal traditional medicinal lore.
poultice:	a soft, moist mass of material applied to the body to relieve soreness and inflammation, usually kept in place with a covering.
prurigo:	an itchy eruption of the skin.
pyrolysis:	decomposition brought about by high temperatures.
sandy blight:	an infection of the eyes; either conjunctivitis or trachoma where irritation is caused by granular inflammation of the eyelids.

sinter:	a hard siliceous or calcareous deposit, or precipitate.
styptic:	(of a substance) capable of causing bleeding to stop when it is applied to a wound.
totemic:	relating to, or resembling, a totem or totems.
unctuous:	having a greasy or soapy feel.
whitlow:	an abscess in the soft tissue near a fingernail or toenail.
wirrigan:	an Aboriginal medicine man or woman, also: *wirrigen, karadji, kurdaitcha, gadaidja, cadiche, caradjee, kadaitcha,* or *kadija*.

Chapter 1

Introduction

"To us, health is about so much more than simply not being sick.

It's about getting a balance between physical, mental,

emotional, cultural, and spiritual health.

Health and healing are interwoven, which means

that one can't be separated for the other."

Dr Tamara Mackean

For millennia,[1] Aboriginal people developed a pharmacopoeia that, by utilising the natural environment's available resources, was sufficient to effectively cope with the majority of medical conditions encountered. Isolated on this continent, Aboriginal people's immune

[1] The First People arrived on the continent now called Australia at least 65,000 years ago, based on current genetic and archaeological information. Chris Clarkson, Zenobia Jacobs, Ben Marwick, Richard Fullagar, Lynley Wallis, Mike Smith, Richard G. Roberts, Elspeth Hayes, Kelsey Lowe, Xavier Carah, S. Anna Florin, Jessica McNeil, Delyth Cox, Lee J. Arnold, Quan Hua, Jillian Huntley, Helen E. A. Brand, Tiina Manne, Andrew Fairbairn, James Schulmeister, Lindsey Lyle, Makiah Salinas, Mara Page, Kate Connell, Gayoung Park, Kasih Norman, Tessa Murphy and Colin Pardoe, "Human occupation of northern Australia by 65,000 years ago". *Nature*, 547: 7663 (2017): 306–310, https://doi.org/10.1038/nature22968; Sheila M. van Holst Pellekaan Max Ingman, June Roberts-Thomson, Rosalind M. Harding, "Mitochondrial genomics identifies major haplogroups in Aboriginal Australians". *American Journal of Physical Anthropology* 131: 2 (October 2006): 282–294. https://doi.org/10.1002/ajpa.20426.

systems satisfactorily protected them from a variety of pathogens they naturally came across. 'Their immune systems were attuned to the habitats they occupied and were able to produce the right proteins (antibodies) to attack the invading pathogens, whether a virus or bacterium, and in most cases counter their effect.'[2]

The diseases Aboriginal people faced prior to colonisation did not include the highly infectious pathogens, or the diseases they caused, carried by the colonists, which were totally foreign to the immune systems of Aboriginal people that had been serving them well for many thousands of years. 'As a result, they were often slow in recognising an unknown invader and unable to mount a speedy defence before the invading pathogens were able to replicate in amounts that caused serious illness and death'.[3] The transmission of diseases to Aboriginal people happened in different ways, in different places and at different times.

From the tropical north to the temperate south to the central arid areas, in each zone a variety of ingredients formed the local pharmacopoeia, including tree bark, leaves, botanical oils, wild herbs, sap and animal products and minerals. The vast Aboriginal pharmacopoeia ensured Aboriginal people were in better health than the colonisers who came to possess their lands.[4] Several of the viruses and bacteria that arrived with the colonisers in 1788 were foreign pathogens to the continent's biota. The long-term detrimental health effects of colonisation on the Aboriginal population continue to date, despite it being over a decade

[2] Peter Dowling, *Fatal Contact: How Epidemics Nearly Wiped Out Australia's First Peoples*. Clayton: Monash University Publishing, 2021, xviii.
[3] Dowling, *Fatal Contact*, xviii.
[4] John Gascoigne and Sara Maroske., "Colonial science and technology", *The Cambridge History of Australia*, ed. A. Bashford and S. Macintyre. Cambridge: Cambridge University Press, 2015, 438-461.

since the first *Closing The Gap Prime Minister's Report 2012.*[5] These include lower life expectancy, higher infant mortality, and higher disease burdens.[6]

This thesis contributes to knowledge and scholarship regarding the traditional Aboriginal pharmacopoeia, specifically detailing the Aboriginal lithotherapeutic industries of the Greater Hunter region. Aboriginal people all over the continent were using a variety of mineral medicines acquired from the immediate environment, such as ochre and *kopi*. These minerals were often traded great distances, as were mineral medicines sourced from the Greater Hunter region that contained multi-use sulphate minerals.

Aboriginal traditional healers, or *karadji,* were generally intelligent, skilled and highly trained health practitioners. Generally, the *karadji* were recorded by non-Indigenous observers as being initiated men, however women were known to undertake an equal role within some *nurras* and nations. Healers held a special place of high regard within Aboriginal society. Their knowledge was accumulated over years of training from childhood to adulthood and their lives marked with special rituals and ceremonies reserved only for those highly esteemed and trusted members of Aboriginal society selected to become *karadji.* Often treated with suspicion by the colonisers, the *karadji* were sometimes referred to as 'sorcerers'. Non-Indigenous people who understood their healing ability would refer to the *karadji* as either 'medicine men' or 'medicine women', or 'clever men' or 'clever women'.

[5] Closing The Gap, Prime Minister's Report 2012, ISBN PDF 978-1-921975026-4. https://www.closingthegap.gov.au/sites/default/files/files/ctg-report-2012.pdf
[6] Dowling, *Fatal Contact*, 236.

The *karadji's* ability to miraculously heal a vast array of illnesses for which the colonisers did not have cures resulted in the assumption by many non-Indigenous observers that the *karadji* possessed supernatural powers and abilities.

> At the time of colonisation, the arriving European medical community largely subscribed to the long-standing humeral theories of sickness and health. These theories had been first advanced by Greek physician Hippocrates in the 5th century BCE, and later championed by another Greek physician, Galen of Pergamon, in the 2nd century AD, to such an extent that they became part of a quasi-religious medical dogma that lasted for almost two thousand years. The modern idea that minute organisms might be the cause of disease (the germ theory of today) had been postulated as early as the 2nd century but it had little impact on the medical establishment's conception of the causes of disease. It was not until the 19th century breakthroughs of Louis Pasteur and Robert Koch espousing the germ theory that the role of microbes in the causation of disease began to be accepted.[7]

Humeral theory, held by the Western medical profession at the start of the colonial period, was based on the theory that the body's four humours, being black bile, white bile, phlegm and blood, coincided with earth, fire, water and air – the four elements of the planet. Each humour held qualities such as wet or dry and hot or cold. Galen believed that an imbalance of these humours within one's body caused disease and was a holistic phenomenon. Australia's distance from Europe encumbered the dissemination of medical knowledge, new discoveries, ideas and treatments within the colony. The vast distance also contributed to newer medical concepts being slower to be accepted within Britain's distant colonies.

[7] Dowling, *Fatal Contact*, 4.

> Many of the drugs used in the 19th century were patent medicines (concoctions would be a better description) of little use in reducing the symptoms of infection. A highly popular concoction of the day was 'Holoway's Pills', reputed to cure gout, rheumatism, inveterate ulcers, sore breasts, sore heads, bad legs and so on. 'Doctor More's Indian Root Pills' was another invention that claimed to 'purify the blood' and to be a positive and permanent cure for 'biliousness, constipation, indigestion, headaches, kidney troubles, piles, pimples and female ailments'. Even as late as the turn of the 20th century, little effective treatment was available for most of the known infectious diseases, and doctors treating the ill were helpless because of their lack of knowledge of the true cause of the disease.[8]

In contrast to Western medicinal practices, in Aboriginal society many remedies and medicinal cures did not need consultation with the *karadji* before being applied by members of the Aboriginal community, or the patient themselves.

Colonisation, specifically the diseases that arrived with the colonisers and the devastation they caused combined with the usurpation of Aboriginal lands, resulted in the severe disruption of the oral transmission of many aspects of Aboriginal traditional knowledge. When the colonisers took possession of two of the Greater Hunter region's sacred healing sites, namely Burning Mountain and Bulahdelah Mountain, Aboriginal people's access to the sources of our lithotherapeutics (mineral medicines) was restricted. This also prevented the necessary demonstration of the empirical processes of mineral extraction, beneficiation, preparation, storage and trade necessary for the impartation of cultural healing knowledge to future generations. The colonisers prevented Wonnarua and Worimi people from passing on

[8] Dowling, *Fatal Contact*, 6.

cultural healing knowledge at the source of the mineral ores used in their lithotherapeutic preparations in traditional ways at a time in history when Aboriginal people had suffered a critical loss of population due to imported diseases.

> With population and language loss comes a disconnection between surviving groups and societies. A breakdown in the trade and reciprocity systems that have sustained the cultural and biological fabric of a population follows. The acquisition of valuable commodities and products that have been traded and exchanged, in many cases over long distances, are no longer available. There is a loss of contact with other social groups, contact that has sustained the kinship systems regulating marriage and social relations across the country. Epidemics not only kill people but can drastically alter, forever change and obliterate the very essence of a society.[9]

Extreme pressure was placed upon traditional Aboriginal medicinal practices through the colonisation of the Australian continent.[10] The gaps present in our modern knowledge of Aboriginal traditional medicinal lore represent a significant loss of culture and identity for Aboriginal people, and while great effort has been made to gather and record this knowledge, much has been lost forever due to colonisation.

The commercialisation of scientific knowledge from the Aboriginal pharmacopoeia in Australia has encompassed animal, vegetable, and mineral preparations. From its inception, science remained at the new colony's core. The colonisers were quick to commercialise Aboriginal scientific knowledge that promised marketable benefit, with some remedies still widely used today, such as eucalyptus and tea tree oils. An integral part of the new colony's

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[9] Dowling, *Fatal Contact*, 14.
[10] Philip Clarke, "Aboriginal healing practices and Australian bush medicine", *Journal of the Anthropological Society of South Australia*, 33 (2008): 3-38.

scientific culture and identity was built upon a foundation of knowledge obtained directly from Aboriginal people.

When the colonisers first walked upon Aboriginal land, the Aboriginal pharmacopoeia ensured Aboriginal people were in better health than the newcomers. Long before the arrival of the British colonisers, Aboriginal people were effectively performing cranial surgery, setting and repairing fractures, amputating limbs and delivering the long-term medical after-care required for these patients to successfully heal.[11] An example of the continuation of this practice was recorded in 1951 when a very elderly member of my extended family spoke of using her knowledge of bone setting to have set and healed her own broken wrist without any consultation or follow up with any medical professional.[12]

The Worimi associate natural resources with the use of medicines, the passing on of cultural knowledge, the provision of foods, the responsibility of caring for the land, our kinship systems and strengthening the community's social bonds. We do not separate our connection to the environment and Aboriginal heritage because the two are inseparable. There is a wealth of medicine readily available in Worimi country of botanical, animal and mineral origin. All across the continent, Aboriginal people have used non-botanical items for healing since the Dreaming. Some of these remedies have included white kaolin clay (for stomach upsets), red earth (applied to wounds, sore, chapped lips), the bush cockroach (an extract from this insect is used as an anaesthetic), charcoal from a certain species of ant's nest (used to relieve sore eyes), crushed green ants (used as a lotion or infusion for colds) and 'brood food' from the ground-living bee (used as a medicine for lung issues). In some parts of the country where the

[11] Gascoigne and Maroske. "Colonial science and technology", 438-461.
[12] "Tuncurry Lady 100 Years Old", *Dungog Chronicle: Durham and Gloucester Advertiser*, October 17, 1951,1, http://nla.gov.au/nla.news-article140848295

laterite stone is available, it would be heated and placed on aching teeth. In the north, coral would be milked for a white substance rubbed on headaches and used for colds.[13]

Aboriginal healers, and their practices, occupy a space between the spiritual and material realms.[14] Aboriginal medicine was often a mixture of both ritual and remedy; *karadji* being holistic healers. Western doctors of the early colony's treatments were disease-focussed, in contrast, the *karadji* considered the social, cultural, emotional, spiritual, mental and physical well-being of the entire community in their practice. The *karadji* recognised cures could be found in both the physical or spiritual spheres, as ailments themselves can have either physical or spiritual causes. Crystals were acknowledged as the source of the *karadji*'s healing power. Terminology used by early colonial anthropologists and those in governmental reporting positions such as the words 'sorcerer', 'wizard', 'magician' and 'charlatan' used to describe Aboriginal doctors[15] undermined the wealth of knowledge these healers possessed.

Uncle Max 'Dulumunmun' Harrison, whom I was fortunate to be connected to through my mother's godmother Aunty Rita Chapman, used to say, 'I've got to give it away to keep it' which, when we understand that the passing down of knowledges is how culture was preserved for tens of thousands of years, are wise words. That said, Uncle Max held knowledge of a considerable number of Aboriginal natural medicine preparations yet staunchly refused to pass knowledge of these healing remedies down to the younger

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[13] J. Reid, "Medicine and Health in Body." In J. Reid, ed. *Land and Spirit: Health and Healing in Aboriginal Society*, St Lucia: UQP, 1982: 161.
[14] D. Suggit, "A Clever People: Indigenous healing traditions and Australian mental health futures." A Short Thesis, ANU, October 2008, 3. https://digitalcollections.anu.edu.au/bitsteam/1885/12051/1/Suggit_D_2008.pdf
[15] A. P. Elkin, *Aboriginal Men of High Degree: Initiation and Sorcery in the World's Oldest Tradition,* Rochester: Inner Traditions International, 1994, xxv, 6, 39-40, 44-45, 110-111, 119-122, 132, 154-158, 160-161, 165; "Witchcraft. Aboriginal superstitions". *The Telegraph*. August 14, 1913, 14.

generations of Aboriginal people if he thought they may try to profit from the knowledge, instead only gifting his knowledge to those who wanted to learn to help their communities and those keen to learn for cultural reasons. Healing knowledge is inextricably connected to the sacred for Aboriginal people, and to the well-being of our communities.

Legal scholar Katie O'Brien has identified a set of characteristics that are common to Indigenous knowledge systems:

- Indigenous people often hold communal rights and interests in their knowledge;
- There is a close interdependence between knowledge, land, and spirituality in [I]ndigenous societies;
- Knowledge, innovations and practices are often transmitted orally in accordance with customary rules and principles; and
- There are rules regarding secrecy and sacredness that govern the management of knowledge.[16]

Aboriginal people have been facing, and overcoming, hurdles in all areas of health (social, cultural, emotional, spiritual, mental and the physical well-being of the entire community) for over 65,000 years. Since colonisation we have remained agile in the ways we adapt, react and overcome the challenging new health dilemmas set before us. As respected Bundjalung Elder and Associate Professor Boe Rambaldini will willingly tell you, Aboriginal people represent around 3% of the total population of Australia and to effect meaningful change to Aboriginal

[16] Katie O'Bryan, "The Appropriation of Indigenous Ecological Knowledge: Recent Australian Developments," *Macquarie Journal of International and Comparative Environmental Law* 1: 1 (2004): 29-48.

health outcomes we need the other 97% of the population to work with us to ensure that our health status is returned to match the level of health we enjoyed prior to invasion.

Uncle Boe's trusted relationships with many communities, combined with the deep respect those communities have for him, has enabled research relationships to develop which have resulted in the development of the co-design approach to collective impact, the Rambaldini Model.[17] Aboriginal people have faced marked health disadvantage since colonisation.

> Addressing the problems in Aboriginal health is an important public priority that requires new and different approaches. The Rambaldini Model is one such tool that has proven effective in engagement and outcomes.[18]

Western concepts of time exist with the focus of chronological time, where time is viewed on a horizontal line. For Aboriginal people eternity is in the now.[19] The past underpins the present. Events today are happening because of the events in our yesterdays. Likewise, we understand our yesterdays will inform our tomorrows. New and innovative approaches to understanding and addressing the disparity in Aboriginal health, such as the Rambaldini Model, are beacons guiding the way forward, yet they are also guiding us back – back to the remarkable good health Aboriginal people always enjoyed. The western concept of time fails in understanding the interconnectedness of Aboriginal people to their ancestors and to their descendants. Further, it fails to understand we, as Aboriginal people, see everything that has happened in history as interlinked with our present and, likewise, interconnected to our futures. The interactions of our ancestors with the ancestors of non-Indigenous Australians

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[17] Kylie Gwynne, Boe Rambaldini, Vita Christie, David Meharg, Josephine D. Gwynn, Yvonne Dimitropoulos, Carmen Parter, John C. Skinner, "Applying collective impact in Aboriginal health services and research: three case studies tell an important story", *Public Health Research and Practice,* 32: 2 (June 2022), e3222215, https://doi.org/10.17061/phrp3222215
[18] Gwynne et al., "Applying collective impact in Aboriginal health services and research".
[19] Rebecca Walker, "Eternity Now: Aboriginal Concepts of time." *Others Magazine*, July 3, 2016, https://others.org.au/features/eternity-and-aboriginal-concepts-of-time/#

link us together in ways that cannot be undone - but can be healed. We need the involvement of non-Indigenous Australians today to unwind the injustices of the past. Similarly, this interconnectedness means that we as Aboriginal people need to be indivisibly involved in the process of Closing The Gap for real healing to take place. This deep awareness of our spiritual interconnectedness and the eternal concept of time – the Aboriginal concept of 'eternity now' - informs Uncle Boe's directives that both Aboriginal and non-Indigenous Australians must join together to properly heal the health inequities that exist in the now.

This research contributes to knowledge of the gap within the literature regarding the use of mineral medicines of the Aboriginal pharmacopoeia, specifically the Aboriginal medicinal use of alum, sulphur, sulphuric fumes and mineral clays for the production and trade of pharmaceuticals and examines the sacred healing sites from which the mineral ores were sourced. It also contributes to broader scholarship on the commercialisation, colonisation, and decolonisation of Aboriginal cultural scientific knowledge. This body of work specifically advances what is known regarding the Aboriginal use of, manufacture and trade in Aboriginal lithotherapeutics and the significant place these mineral medicines hold within the Aboriginal pharmacopoeia.[20]

This thesis also contributes to heritage scholarship, in particular the scholarship on Aboriginal heritage sites and endeavours to affirm the connection between the physical landscape and Aboriginal cultural knowledges.[21] I acknowledge and understand the multi-faceted connection between Aboriginal people and Aboriginal environmental knowledge, and

[20] R. V. Carr. "Wanted – new interest for an old cure-all". *The Australian*. December 29, 1997. trove.nla.gov.au/work/62666900?q=sulfazone&c=article&versionId=75730865

[21] For examples see Michael Organ. "A Conspiracy of Silence: The NSW National Parks and Wildlife Service and Aboriginal Cultural Heritage Sites", *Aboriginal Law Bulletin* 3: 67 (1994): 4-7, and John Rolfe and Jill Windle. "Valuing the Protection of Aboriginal Cultural Heritage Sites", *The Economic Record* 7: Special Issue (2003): S85-S95.

present both Bulahdelah Mountain and Burning Mountain's heritage values within this thesis as an Aboriginal Epistemology.

The Aboriginal healing trade in lithotherapeutics required specific economic organisation using mineral resources that were derived from often geologically unique localities. What I know on a deep, personal level is that Country was, and is, our healer. When our lands were usurped, we lost access to life-giving resources; we lost significant parts of our cultural heritage and lost the identity encompassed within that culture. This research has confirmed Aboriginal people were in all probability the world's first chemists, first chemical technologists and first pharmacists.

Personal connection to the study

I am an Aboriginal Worimi Biripai woman, with family connections to Port Stephens, Mayers Flat, Bungwahl, Bulahdelah, Karuah, Forster, Tuncurry and Taree on the mid north coast of NSW, whose ancient bloodlines trace back through generations of Aboriginal healers. My family has further links to the Gringai, Wonnarua and Yuin nations. As an early career researcher working in Aboriginal health, well-being and education. I believe the important work of using my Aboriginal voice to shine a light on Aboriginal lithotherapeutic healing knowledge was set before me from the day I was born and was signposted by the name my Aboriginal mother was guided to gift me. My given name Cara is made up of syllables which form the word stem *kara* that, across many Aboriginal languages, holds the meaning 'healing' and 'the best use of breath in the form of a voice'. The word stem holds 'a linguistic energy that shadows physical and metaphysical energy'.[22] The word *karadji* holds this word stem, as does the word *karadigan* which translates as 'a doctor, a healer, one who works with the fertile and beneficial forces of the burgeoning in the world'. The word *karaga* means to use your voice meaningfully 'to pronounce, to utter, to urge meaningful breath out

[22] Ross Gibson, "This Lively World", in Jones, J., Gibson, R., O'Callaghan, G., and Costello, O., eds., *Jonathan Jones, barrangal dyara (skin and bones*), Kaldor Public Art Project 32, Port Melbourne: Thames and Hudson, 2016, 25-26.

of oneself into the world'. It is my aim that within this thesis these definitions combine so that this work brings forth healing through truth telling about our Aboriginal history.

My ancestors passed on both culture and identity in the handing down of traditional healing knowledges, despite the oppression of colonisation, and the ongoing trauma resulting from it. Reconnecting to cultural knowledge can bring healing and identity for Aboriginal people today. Part of my aim when undertaking this research was to explore, record and preserve traditional medical wisdoms and practices for the generations of tomorrow and to honour the generations of yesterday.

My ancestors were healers who were healing on, and healed by, Worimi Country since the Dreaming. From childhood I listened to our family stories being told, stories that are important oral histories. I listened as my Elders spoke of the spiritual gift of healing the ancestors have gifted to us. I was filled with pride hearing of the high regard in which our family line was held throughout the Mid-North Coast community. The storying related to my bloodline told of our 'healing hands' and this has not only informed this study but was the catalyst for my research into Worimi healing practices in the first instance. From childhood my curiosity was uncontainable on this topic, especially when listening to the aunties yarning. I asked, '*Why do we have these healing powers and medical skills?'*. Pestering further I asked, *'What were the magical stones the ancestors were holding?* and '*How did the ancestors get their healing power from their stones'?* As an adult I was not satisfied with answers that relegated the ancestors' healing powers to exist only in the spiritual realm. I came to see that Aboriginal healing practices are holistic, considering both the spiritual and physical status of the patient. The *karadji* today still use the laying on of hands and massage, used to transfer healing energy from doctor to patient and to ease physical ailments, alongside

traditional medicinal remedies. The ancestors have guided the way for me to become the custodian of the knowledge found within the pages of this thesis, and I am extremely proud that they chose me to be the vessel to write this remarkable history of Worimi healers and their healing trade.

Review of the literature

Historical evidence demonstrates that some of the lithotherapeutics of the Aboriginal pharmacopoeia were tried, trusted, and deemed to be extremely effective by the early colonists. The use of Aboriginal mineral medicines by the non-Indigenous triggered the colonists' commercialisation of these remedies for profit swiftly thereafter. Early observers witnessed the *karadji* use their sophisticated environmental knowledge to derive and formulate their medicines. However, Aboriginal lithotherapeutic knowledge and the subsequent commercialisation of these mineral medicines and the appropriation of Aboriginal lithotherapeutic resources has received scant scholarly attention. In a recent article, published in *Aboriginal History*, I described the production, use and trade of mineral medicines sourced from Wonnarua Country's Burning Mountain. Gleaned from research used in this thesis, the article historicises lithotherapeutics of the Wonnarua in the context of their deep historical story of use, manufacture and trade. The colonists' subsequent dispossession, appropriation and commodification of these mineral resources is mapped alongside a strong call for recognition of Aboriginal innovation and knowledge as cultural heritage.[23] My article remains the only scholarly work addressing the history of the usage of Aboriginal mineral medicine.

There has been significant research undertaken into Aboriginal pharmacopoeia's botanicals and a comprehensive summary would be too large for this review of the literature.[24] Across

[23] Cross, "Our Country, our healer," (2021), 83-108.
[24] Examples of regional studies include P. Clarke, "Aboriginal uses of plants as medicines, narcotics and poison in southern South Australia." *Journal Of The Anthropological Society of South Australia* 25(5): (1987): 3-23; T. Henshall, D. Jambijinpa, J. N. Spencer, F. J. Kelly, P. Bartlett, J. Mears, E. Coulshed, G. J. Robertson, L. J. Granites, *Ngurrju Maninja Kurlangu. Yapa Nyurnu Kurlangu. Bush Medicine.* Revised edition. Yuendumu:

these studies of traditional Aboriginal medicines, plants feature as the main ingredients, or sole ingredients, in most remedies recorded, however in certain traditional treatments, the main ingredient is derived from animal or mineral substances,[25] this being an area of the Aboriginal pharmacopoeia that has been under-researched to date, and it is my hope that this thesis will make a valuable contribution to the existing literature.

There is an emerging body of literature in the realm of the appropriation of Indigenous biological and ecological knowledges, bioprospecting and legal scholarship on biopiracy.[26] While beyond the scope of this thesis, future research looking at Aboriginal lithotherapeutics using the lens of biopiracy as it relates to the appropriation of these complex Indigenous knowledges would be valuable.

Aboriginal lithotherapeutic manufacture and trade has not received the same level of attention as has the Aboriginal pharmacopoeia's plant-based medicines. Traditional medical ethnobotanical practices may endure in cultures in transition long after flora ceases to be used as a source of totemic identity, weaponry and traditional food.[27] Through observation and personal interaction, the colonisers adopted many of Aboriginal medical ethnobotanical practices. The historical records are lacking on the origin of most colonial bush medicine practices and many non-Indigenous people were unwilling to acknowledge Aboriginal lore as

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Walpiri Literature Production Centre, (1980); S. Kyriazis, *Bush Medicine of the Northern Peninsula Area of Cape York.* Bamaga: Nai Beguta Agama Aboriginal Corporation, 1995; D. Levitt, *Plants and People. Aboriginal Uses in Plants on Groote Eylandt.* Canberra: Aboriginal Studies Press, 1981 and W. E. Roth, "Superstition, magic, and medicine. North Queensland Ethnography." *Bulletin* No.5, Brisbane: Queensland Government Printer, 1903.

[25] A. Cribb and J. Cribb, *Wild Medicine in Australia.* Sydney: Fontana/Collins, 1984, 11, 17, 208-209.

[26] Some examples of this work are O'Bryan, "The Appropriation of Indigenous Ecological Knowledge": 29-48; Marcia Ellen DeGeer, "Biopiracy: The Appropriation of Indigenous Peoples' Cultural Knowledge," *New England Journal of International and Comparative Law,* 9:1, 179; Suzi Hutching, "Introduction: Indigenous knowledges impacting the environment.", *AlterNative: An International Journal of Indigenous Peoples* 10: 5 (2014): 445-449.

[27] J. Pearn. "The world's longest surviving paediatric practices: Some themes of Aboriginal medical ethnobotany in Australia". *Journal Of Paediatrics and Child Health* 41 (2005): 5-6.

the source of their remedies.[28] Much of the knowledge derived from the Aboriginal pharmacopoeia was shared by Aboriginal people with the colonisers, rather than simply observed by them and thus became the foundation for the 'bush medicine' used by many non-Indigenous people in the early days of the colony. Colonial misconceptions regarding the Aboriginal culture as 'primitive' almost certainly prevented a greater transference of Aboriginal traditional medical knowledge to the non-Indigenous.[29] Traditional mineral medicines were often site-specific and the dispossession of Aboriginal land halted much of the oral transmission and the necessary demonstration of the empirical processes of mineral extraction, beneficiation, preparation, storage and trade.

In the eighteenth century, as science became the dominant way of understanding and therefore controlling the world, the exploration of the Pacific had a strong scientific focus. As the colony developed, so developed a greater scientific understanding of the possibilities of this new world. From the beginnings of the Australian colony, science formed part of the culture and identity of this emerging nation. Australia's colonial scientific history shows us that science was at the centre of how non-Indigenous Australia chose to define itself when the colonisers possessed our lands.[30]

However, an integral part of that scientific culture and identity was built on a foundation of knowledge obtained from Aboriginal people. For example, the 1850s saw Joseph Bosisto, a Melbourne pharmacist, produce eucalyptus oil, a renowned Aboriginal traditional medicine, which Bosisto marketed to subjugate contagion and ameliorate the air. Although well known as an antiseptic today, Bosisto's eucalyptus oil was not marketed for its antiseptic properties

[28] Cahir et. Al., *Aboriginal biocultural knowledge in south-eastern Australia*, 2018, 226.
[29] Clarke, "Aboriginal healing practices and Australian bush medicine", 3-38.
[30] Gascoigne and Maroske., "Colonial science and technology", 438-461.

until after a microbial theory of disease developed.[31] In the 1870s, Joseph Bancroft, a Brisbane Hospital surgeon, presented his series of papers to the Queensland Philosophical Society which detailed the therapeutic properties of 'pituri' (or *Duboisiahopwoodii*), a narcotic used and traded by the Aboriginal people of Western Queensland. A drug derived from *Dubroisiahopwoodii* was developed and utilised in ophthalmic surgery in Australia, Europe and the United States.[32] In 1944, many troops engaged in the D-Day invasion of France 'did not suffer seasickness due to taking a drug, the hyoscine from the Australian corkwood tree, the beneficial properties of which had been discovered by Indigenous Australians[33]'.

There exists substantial gaps in current knowledge of the plants, minerals and other items used by Aboriginal people within the Aboriginal pharmacopoeia. When botanists, anthropologists and medical science itself began to realise the wisdom contained within the Aboriginal pharmacopoeia, too much knowledge had been lost through the effects of colonisation.[34]

Serious scientific attention turned to the Aboriginal pharmacopoeia during World War II, fuelled by fears that drug supplies from abroad may be cut off. Historical newspaper reports note Dr. C. Barnard, of Canberra's C.S.I.R's Plants Division, toured the continent interviewing Aboriginal Elders as to herbal remedies of the Aboriginal pharmacopoeia.[35] In the post-war decades, even greater research was undertaken in Australia to source useful new botanicals. The Commonwealth Scientific and Industrial Research Organisation (CSRIO)

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[31] Gascoigne and Maroske., "Colonial science and technology", 459.
[32] Gascoigne and Maroske., "Colonial science and technology", 459.
[33] Geoffrey Blainey, *A Land Half Won,* Melbourne: Sun Books, 1980, 137, quoted in Richard Allsop., *Geoffrey Blainey – Writer, Historian, Controversialist*, Melbourne: Monash University Publishing, 2020, 108.
[34] A. Cribb and J. Cribb, *Wild Medicine in Australia*, Sydney: Fontana/Collins, 1984, 17.
[35] "Search for Drugs." *Warwick Daily News,* July 25, 1941, 2.

launched the *Phytochemical Survey of Australian Plants* in 1944 that in the subsequent two decades tested over 4000 species of plants for medicinal properties. The survey was a systematic investigation of the Australian flora seeking to identify physiologically active chemicals, and was undertaken by Drs. L. J. Webb, F. H. Shaw and J. R. Price.[36] The survey's objectives were aided by the presence of knowledgeable Aboriginal healers and access to existing records of Indigenous plant use.[37] Dr Webb noted the Aboriginal pharmacopoeia suffered from 'the lack of use of plants as emetics, antiseptics and blood coagulants, associating this with a less sophisticated level of therapeutics amongst the Aborigines than elsewhere'.[38] Contrary to Webb's statement, the Aboriginal pharmacopoeia does include medicinal plants that are used as emetics (maiden hair fern: *adiantum aethiopicum*).[39], antiseptics (eucalyptus: *eucalyptus piperita*)[40] and blood coagulants (bloodwood: *corymbia intermedia*).[41] It should be noted that after years of researching Aboriginal medicinal plants for the C.S.I.R.O, Webb still did not possess a comprehensive understanding of the Aboriginal pharmacopoeia, which, in part, speaks to its complexity and largeness; nor did he appear to consider non-plant items in his debasing assessment of Aboriginal therapeutics. This thesis will present evidence that the Aboriginal pharmacopoeia did not rely solely on botanicals for emetics, antiseptics and coagulants, and that Aboriginal traditional knowledge encompassed the use of mineral medicines, placing them alongside the technologically advanced ancient societies of Greece, Rome and Egypt.

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[36] Cribb and Cribb. *Wild Medicine*, 11.
[37] Cahir et al., *Aboriginal biocultural knowledge in south-eastern Australia*.
[38] Cribb and Cribb, *Wild Medicine*, 17.
[39] Navin Officer Heritage Consultants, "Aboriginal Cultural Heritage Proposal for a Second Sydney Airport at Badgerys Creek or Holdsworthy Military Area", Commonwealth Department of Transport and Regional Development, Concord: PPK, 1997. https://www.westernsydneyairport.gov.au/sites/default/files/Draft_Environmental_Impact_Statement_1997_Second_Sydney_Airport_Proposal_Technical_Paper_11_Aboriginal_Cultural.pdf
[40] Mary Gilmore. "Mary Gilmore's ARROWS", *Tribune,* February 8, 1961, 8. http://nla.gov.au/nla.news-article236255149
[41] "Medicine." Fact Sheet 15. Arrawarra Project Fact Sheets. 2019. http://www.arrawarraculture.com.au/fact_sheets/pdfs/15_Medicine.pdf and https://www.yumpu.com/en/document/view/8421334/project-fact-sheets-the-arrawarra-sharing-culture-project

Sources and approach

The primary and secondary sources consulted in researching this thesis make it clear that the non-plant based Aboriginal pharmacopoeia, in particular sulphur, sulphate minerals and medicinal sulphate clays, have been under-researched, under-documented and under-acknowledged. I have taken a multidisciplinary approach to the material, bringing together traditional historical documentary records with Aboriginal oral traditions from my own family and community, and western scientific knowledge.

Despite the colonists' misconceptions and ignorance of Aboriginal therapeutic practice, parts of the historical record they have left can often be of immense value to Aboriginal researchers looking to piece together fragmented parts of our culture and identity. By synthesizing colonial observations found across the historical record, using both primary and secondary sources, we can garner a fuller picture of Aboriginal history and cultural heritage.

The primary sources used in this study come from historical collections held at the Mitchell Library, the State Library of New South Wales, the State Library of Victoria, the Cultural Collections of the University of Newcastle, and many other libraries. Materials used in this study were procured from both private family collections and those held by various historical societies. Family collections of the Mayers family, of which I am a descendant, were used in my research surrounding the Worimi trade of alum lithotherapeutics sourced from Bulahdelah Mountain, NSW. The family collections of the Hall family (and descendants) were generously shared with me during the course of my research into the Wonnarua trade in,

and subsequent non-Indigenous commercialisation of, lithotherapeutics manufactured from the mineral ore sourced from Burning Mountain, NSW.

In addition, reports from the NSW National Parks and Wildlife Service have provided valuable information by way of documentation, either prepared by them or prepared for them, that has proved useful in relation to Burning Mountain and Bulahdelah Mountain respectively. The 1993 NSW National Parks and Wildlife Service Burning Mountain Nature Reserve Plan of Management was valuable to my research and provided scientific and historical information pertaining to Aboriginal and non-Indigenous use of the mount. Reports relating to Bulahdelah Mountain included the Navin Officer Heritage Consultant report prepared in 2000 regarding the Bulahdelah ByPass – Pacific Highway and a report prepared by Umwelt in 2003 for the NSW National Parks and Wildlife Service which were written in consultation with the local Aboriginal community and included important ethno-historic information along with an oral history investigation into reported burials on the mount.

I have also drawn upon newspaper articles of the period to clarify, reiterate and expand upon other sources utilised for this study, both archival and oral. Historical newspaper archives, reviewed both in person at various NSW historical societies and online using keyword searches at Trove, verify the effects of colonisation on two unique Aboriginal lithotherapeutic industries and the trade in these minerals by Aboriginal and non-Indigenous persons.

The documentary record is inadequate in its provision of a complete picture regarding the history of Aboriginal lithotherapeutic use. Aboriginal voices from the past found within Aboriginal oral tradition are crucial for filling the gaps in the historical record. The

importance of bringing forward Aboriginal ways of knowing and transmitting knowledge orally cannot be overstated. These traditions are supported by information from the documented use of Aboriginal medicines by the colonists.

Scientific journal articles have allowed me to explore certain theories and navigate certain unfamiliar medical and scientific terrain, whilst confirming the sophistication of the Aboriginal pharmacopoeia. Scientific research articles that informed this study were many and varied, including a paper on the crystallography, geochemistry and environmental significance of sulfate minerals, a study on the adsorptive properties of pharmaceutical grade clays and articles on the history of the ancient use of salt and gypsum in Mesopotamian chemical technology. [42] Effie Photos-Jones work was particularly informative to this research, including her 2018 papers, 'From mine to apothecary: an archaeo-biomedical approach to the study of the Greco-Roman lithotherapeutics industry'[43] and 'Greco-Roman mineral (litho)therapeutics and their relationship to their microbiome: The case of the red pigment miltos'. [44]

[42] R. Pattrick (2001), C. N. Alpers, J. L. Jambor, and D. K. Nordstrom (eds.). "Sulfate minerals: crystallography, geochemistry and environmental significance", *Reviews in Mineralogy 40*, Mineralogical Society of America (2000), Mineralogical Magazine 65(6), 817-818; J. E. Browne, J. R. Feldkamp, J. E. White, J. E. and S. L. Hem. "Characterization and Adsorptive Properties of Pharmaceutical Grade Clays", *Journal of Pharmaceutical Sciences* 69: 7, (1980): 816-823; M. Levey. "Gypsum, Salt and Soda in Ancient Mesopotamian Chemical Technology", *Isis* 49: 3), (September 3, 1958): 336-342; E. Photos-Jones, "From mine to apothecary: an archaeo-biomedical approach to the study of the Greco-Roman lithotherapeutics industry", *World Archaeology* 50: 3 (2018): 418-433. doi: 10.1080/00438243.2018.1515034; E. Photos-Jones, C. W. Knapp, D. Venieri, G. E. Christidis, C. Elgy, E, Valsami-Jones, I. Gounaki, and N. C. Andriopoulou, "Greco-Roman mineral (litho)therapeutics and their relationship to their microbiome: The case of the red pigment miltos", *Journal of Archaeological Science*: *Reports* 22 (2018): 179-192.
[43] Photos-Jones, "From mine to apothecary,": 418-433.
[44] Photos-Jones et al. "Greco-Roman mineral (litho)therapeutics": 179-192.

Structure of the thesis

Chapter one introduces this work whilst summarising my own personal connection to it and offers a review of the relevant literature, discussing the sources and approach used.

Chapter two introduces the traditional lithotherapeutics of the Aboriginal pharmacopoeia, delving into the variety of mineral medicines prepared, used and traded by the Wonnarua people. These traditional lithotherapeutics, all produced from the unique mineral ore available at Burning Mountain in the Greater Hunter region of New South Wales, included medicinal pills, ointments, washes, salves and tinctures. The commercialisation of the Aboriginal traditional medicinal knowledge pertaining to these medicinal prescriptions, derived from the Wonnarua people, is discussed in chapter three. It should be noted that a substantial amount of the information in chapters two and three, although edited, is my own research, previously published by ANU Press, "Our Country, our healer: Aboriginal apothecaries of Burning Mountain", *Aboriginal History* Volume 45, 2021, 83-107. For ease of reading my previously published sections do not appear in quote marks.

Another unique geological site found within the Greater Hunter region of New South Wales is the sacred Aboriginal healing site of Bulahdelah Mountain, situated in Worimi Country. Chapter four discusses the significance of this site and the importance of the sacred medicinal crystals that were manufactured there.

The post-colonisation continuation of Worimi traditional cultural healing practices is the subject of chapter five. Despite the colonists' commercial mining operations halting the

traditional lithotherapeutic manufacture of the Worimi *karadji* at Bulahdelah Mountain, the Worimi people offered their medical skills and shared their medicinal knowledge with the growing local community of both Indigenous and non-indigenous people.

Chapter six examines the commercialisation of the mineral resources found abundantly at Bulahdelah Mountain.

Chapter seven maps the evidence of the trade of medicinal crystals, manufactured by the Worimi *karadji*, to Aboriginal people of New South Wales' South Coast, exploring how several closely guarded sacred healing crystals came to be in the possession of one of the Shoalhaven district's most prominent political figures. Chapter eight looks at the historical record detailing these large sacred healing crystals, obtained by a local politician from the South Coast Aboriginal people, and their eventual display at The Sydney International Exhibition at the Garden Palace in 1879-80.

I have chosen to conclude this thesis with a strong statement of my recommendations for the recognition of the site of Burning Mountain as a site of significant cultural and scientific heritage. Further, it is my recommendation that both the sacred healing sites of Burning Mountain and Bulahdelah Mountain be listed with UNESCO as World Heritage sites. Throughout the process of researching this thesis I have become increasingly concerned that these two culturally significant sacred sites, each bearing a rich testimony regarding the scientific ingenuity of the world's oldest continuing surviving culture and each being landforms with geomorphic features unique to this continent that contain superlative natural phenomena remain, for the most part, unrecognised as sacred healing sites with important links to ancient Aboriginal spiritual traditions. My recommendations also include an urgent

call for archaeological surveys to be conducted at both Burning Mountain and Bulahdelah Mountain.

Chapter 2

Aboriginal apothecaries of Burning Mountain at Wingen

"So I take this word reconciliation and I use it

to reconcile people back to Mother Earth,

so they can walk this land together and heal one another

because she's the one that gives birth to everything we see around us,

everything we need to survive."

Uncle Max Dulumunmun Harrison

For millennia Aboriginal people processed, used and traded mineral medicines, or lithotherapeutics. Aboriginal people were the first people in ancient history to utilise alum and sulphur medicinally, placing Aboriginal people as the world's first pharmacists. The traditional owners of parts of the Greater Hunter region of New South Wales, namely the Wonnarua and Worimi, had access to two unique sources of natural minerals which lend themselves to medicinal use. The traditional use of these efficacious medicinal pills, ointments, washes, creams, crystals and tinctures and the oral histories relating to them expand our knowledge of the ancestral Aboriginal pharmacopoeia.

It should be noted that a large part of the information in the following two chapters, although edited, has been directly drawn from my own research, previously published by ANU Press, "Our Country, our healer: Aboriginal apothecaries of Burning Mountain", *Aboriginal History* Volume 45, 2021, 83-107.

Burning Mountain - Kopurraba on Wonnarua Country

Burning Mountain, at Wingen, has long been a sacred place of healing for Aboriginal people.[1] This place derived its' name, "Wingen", pronounced, *win-jen*, from the local Aboriginal word, "win", meaning "fire".[2] Wingen, located in the upper Hunter region of New South Wales, sits about 225 kilometres north of Sydney. Burning Mountain is positioned between Scone and Murrurundi, on the eastern side of the New England Highway.

Burning Mountain, formerly named Mount Wingen, has an elevation of about 653 metres and is found in Wonnarua Country, which stretches from Broke to the Liverpool Range. Now part of Burning Mountain Nature Reserve, Burning Mountain is Australia's sole naturally burning coal seam and the world's longest burning fire.[3] Around 30 metres underground, the mount's subterranean coal is slowly combusting. The fire, moving gradually south at about 1 metre per year, has been actively burning for more than 5,500 years.[4]

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[1] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve: plan of management.* NSW National Parks and Wildlife Service and Stewart McMahon, Hurstville: The Service, 1993.
[2] This translation is sourced from Sir Thomas Mitchell, *A Journey in search of the Kindur, 1831-2. Three Expeditions into the Interior of Eastern Australia,* Vol. 1 (of 2) Ebook #12928. 1831-2; J. H. M. Abbott, Mount Wingen: It's authentic history, Australia's burning mountain. Sydney: S.n. 1921; R. Bennett, "Letter to the Editor of the Argus: Mount Wingen, near Murrurundi, New South Wales" *The Argus*, December 4, 1883, 5; "The Upper Hunter District. Aberdeen and Wingen. Where the Favourites are Bred. 'The Devil's Smoke Stack'. Australia's Solitary Burning Mountain", October 8, 1910, 15. The translation '*fire'* may be a basic one, with the Wonnarua word *winya* translated '*to burn with fire, to scorch*'. The Wonnarua nominal suffix: causal is *tjin*.
[3] See guinnessworldrecords.com/world-records/77295-longest-burning-fire
[4] J. H. Rattigan, "Phenomena about Burning Mountain, Wingen, NSW", *Australian Journal of Science* 30 (1967): 183-184.

First non-Indigenous observers believed Burning Mountain to be a volcano. In 1829 the mount was recognised by eminent geologist, Rev. C. P. N. Wilton to be a continuously burning coal seam.[5] The burning buried coal causes heat, fissures and slumping on the mount's surface.

If you choose to visit Burning Mountain, walking up the hill from the carpark you will cross a small timber bridge and find the path past the lagoon dotted with rough-barked apple, ironbark and grey box. As you climb higher toward the smouldering summit, tea trees can be found either side of the path. You may also notice stringbark eucalypts, the bark of which the Wonnarua people used to create twine to make fishing nets, called turrila. The Wonnarua also used this twine to weave baskets and to make bags, called buakul.[6] The area around the crevices and chasms at the mount's summit is littered with ancient seashells, and fossils abound in the area - both remnants of when the mount was covered by ocean some 200 million years ago.

> Like much of the east coast of New South Wales, the Hunter Valley – geologically speaking – is both old and new. Parts date back over 400 million years, laid down by ancient volcanoes and fluctuating sea levels. The great coal deposits that underlie much of the valley, popping to the surface around Singleton and in the cliffs at Newcastle, were formed during this era. [7]

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[5] Wilton provided the first account of Burning Mountain written on 10 March, 1829, "The Burning Mountain of Australia. To the Editor of the Sydney Gazette" published in the *Sydney Gazette and New South Wales Advertiser* on March 14, 1829, 2.
[6] J. W. Fawcett, "Notes on the customs and dialect of the Wonnah-ruah Tribe", *Science of Man and Journal of the Royal Anthropological Society of Australasia*, 1 (7) (1898): 152-154.
[7] Mark Dunn. *The Convict Valley: the bloody struggle on Australia's early frontier*. Sydney: Allen and Unwin. 2020, 7.

Burning Mountain's fiery coal seam and vent area is devoid of flora and quite bare, being too hot for vegetation to grow. Amongst the rising smoke, heat haze and powerful fumes, the earth around the chimney area displays rich red iron oxides, mustard-yellow sulphur powder and stark white sinter residue made up of the mineral deposits of sulphur and alum found there [see Figure 1]. The smell of sulphur escaping from the smoky vents is quite distinct, and the surface of the ground, measuring around 350 degrees Celsius, is extremely hot underfoot. Wedge-tailed eagles often employ the mount's thermal currents to elevate themselves. The NSW National Parks and Wildlife Service describes the effects of the burning coal seam on the landscape as follows:

> Combustion of the coal produces a large decrease in the volume occupied by the coal seam, resulting in the collapse of the overlaying rock, with slumping commonly between 1 and 4 metres. These rocks collapse in blocks along weak joint planes within the sandstone. Subsidence cracks open where such blocks of rock have slumped, providing ventilation, which may feed coal combustion. Hot sulphurous gases escape, effectively baking the soil and rock adjoining the vents, altering their geochemical structure, colour and texture – a process called combustion metamorphism … Rock immediately above the burning coal has been altered from kaolinite clay to a hardened, mullite mineral, apparently by temperatures between 1200^{C} and 1750^{C}.[8]

Burning Mountain is listed with the National Trust, the Australian Heritage Commission and the Geological Society of Australia (NSW Division) for its geological significance.[9]

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[8] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve: plan of management*. NSW National Parks and Wildlife Service and Stewart McMahon, Hurstville: The Service, 1993.
[9] N. Vass. *Burning Mountain keeps glowing after 500,000 years on fire.* Newcastle: Living Histories. University of Newcastle. (1991) Re-published 2018: https://livinghistories.newcastle.edu.au/nodes/view/57916.

The Hunter region's first people arrived in this ancient terrain somewhere between 20,000 and 45,000 years ago. Long before the Egyptians built their pyramids - and indeed long before there was an Egypt - Aboriginal people were using Burning Mountain as a heat source[10]. The Wonnarua people employed the continual heat generated by the smouldering coal seam for warmth, cooking and in the construction of weaponry. The heat-hardened stones of the mount's 'brickpit' area are believed to have been utilised by the Wonnarua to form armaments, such as stone tomahawks, called mogo.[11] The local Aboriginal population resourcefully utilised Burning Mountain's abundant natural supplies of sulphur and alum to manufacture multi-use medicines. Conservative estimates predict Burning Mountain has been burning since around 3,500 BCE and, in the process, its valuable mineral resources have been deposited on the summit's surface for over 5,500 years. Other estimates speculate this burning coal seam has been burning for up to 500,000 years, in which case Burning Mountain's Aboriginal mineral medicines may have been in use for tens of thousands of years more.[12]

The Wonnarua People

The traditional lands of the Wonnarua people occupy most of New South Wales' Hunter Valley region and their intricate environmental knowledge was acquired over generations.[13] The Wonnarua had different *nurras* within their Country, including the Gringai who occupied the lands along the Allen and Paterson Rivers, and stretched towards what is now St Clair. Other groups included the Gea-Wegal, Gundigal, Tullong and Murrawon people.

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[10] Dunn, *The Convict Valley*, 11; Mihai Andrei. "This fire in Australia has been burning for 6000 years", *Geology: Offbeat*, January 26, 2015. https://www.zmescience.com/science/geology/coal-fire-australia-26012015/
[11] Fawcett, "Notes on the customs and dialect of the Wonnah-ruah Tribe". (1898): 152-154.
[12] Vass. *Burning Mountain* 2018.
[13] Dunn. *The Convict Valley*, 13.

The Wonnarua were bounded by nations that included the Worimi, Nganyaywana, Wiradjuri, Awabakal and Darkinjung peoples, and had established trading and ceremonial associations to the Kamilaroi people. The Biripai were situated to the north around the Manning Valley, Gloucester and Barrington regions. These larger main groups were made up of smaller *nurras*, connected through marriage and interlinked kinship across the region.

> The interwoven kinship encouraged a commonality of language, with local dialects, as well as linkages through trade and ceremony. The result was a certain amount of fluidity across boundaries and borders, with transition zones and areas of common passage such as trade routes or pathways to ceremonial grounds. [14]

Within the affiliated coastal zone of the Port Stephens region, Sydney and the Shoalhaven, consistent movements and interrelated familial connections can be observed from the beginnings of British settlement and throughout the nineteenth century. [15] These connections linked these diverse groups to a wider Aboriginal economy and a broader depository of cultural knowledge. Both historical and archaeological evidence illustrate the interconnectedness of the Aboriginal inhabitants of the Greater Hunter region, and their connections to the Indigenous nations beyond this region.[16]

Aboriginal Mineral Trade – An Overview

Aboriginal trade in minerals and crystals occurred from the east to west of the continent: the Bundjalung people of New South Wales have been noted to have traded crystals with other

[14] Dunn. *The Convict Valley*, 22.
[15] Paul Irish. *Hidden in Plain View: The Aboriginal people of coastal Sydney*. Sydney: New South Publishing, 2017, 25.
[16] Dunn. *The Convict Valley*, 23.

nations, while the Aboriginal people of Western Australia's Weld Ranges held a monopoly over the supply of red ochre, which was traded to most of the continent[17]. This monopoly was maintained and managed by three Weld Ranges medicine men, a system that was continued over many generations and one that may be reflective of the system of management and trade employed by the *karadji* of Burning Mountain, the *karadji* of Bulahdelah Mountain and their communities. In the Weld Ranges, when one medicine man passed away, another was initiated into the management of the ochre mining and the trade of this valuable mineral. [18] These men managed the mining and extraction of the ochre and guarded their secret well. Today, they are acknowledged as Australia's first miners. The ochre would be gathered and transported annually by the women to where it could be bartered and traded. [19] For nations with no local deposits of ochre, ochre was an item in keen demand, placing nations who possessed surplus quantities in a most advantageous trading position.

The Wonnarua and the Worimi would have held an unmatched trading position when it came to the trade of the specific minerals found within their Country. Annual pilgrimages to these sacred sites would have provided opportunity for both the Wonnarua and the Worimi to trade with other nations on their own Country.

Archaeological evidence for the trade, exchange and movement of natural (or raw) materials is extrapolated from the analysis of stone artefacts. Relatively long-distance movements of Aboriginal people for the purpose of trade and exchange are reported from the area to the north of the Sydney region. One of the Lake Macquarie mission people was reported by the

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[17] M. Parmeter. "Gerry Bostock's story". *LivingNow Magazine Australia*. 2005. https://livingnow.com.au/gerry-bostocks-story/; "First Miners in Australia: Honour belongs to the Aborigines Medicine Men.". *The Evening News,* August 13, 1934, 3. http://nla.gov.au/nla.news-article198778647; K. J. Buchester. *Popular Prospecting: A Guide To Australian Minerals*. Sydney: A.H. and A.W. Reed Pty Ltd, 1972.
[18] "First Miners in Australia". *The Evening News*, August 13, 1934, 3.
[19] "First Miners in Australia", 3.

Reverence Lancelot Threlkeld as having gone 'to the mountains with upwards of 60 spears to exchange for opossum cord made of the fur'[20] and take part in ceremonial activity.

Oral history from the local inhabitants of the Gosford-Wyong area to the north of Sydney denotes a trade route that existed between the Hunter Valley region and Gosford, which as a straight line would be a distance of approximately 120 kilometres. The traditional route went past Wollombi Creek, the MacDonald River and Mangrove Mountain. Evidence for an east-coast route has also been identified by archaeologist F. D. McCarthy:

> a trunk route along the narrow fertile strip of land to the east of the Great Dividing Range, and at various points, such as 'the Hawkesbury-Nepean-Warragamba-Coxs River system…there were connections between the coastal and interior tribes'[21].

This trade route is described as having stretched from

> the Hawkesbury along the Boree Track which entered the Hunter Valley near Milbrodale. Another route, by which Aborigines from as far north as Singleton travelled to visit Brisbane Waters for marine foods, visits Macdonald River Mangrove Mountain.[22]

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[20] Neil Gunson (ed). "Australian Reminiscences and Papers of L.E. Threlkeld Missionary to the Aborigines, 1824-1859". *Australian Aboriginal Studies No. 40. Ethnohistory Series No.2.* Australian Institute of Aboriginal Studies, Canberra. (1974): 206. The mountains mentioned were not the Great Dividing Range, but rather the sandstone plateau of the coastal hinterland.

[21] F. D. McCarthy, 1939a: 406-407 cited in Val Attenbrow, *Sydney's Aboriginal Past: Investigating the archaeological and historical records,* Sydney: UNSW Press, 2010, 123.

[22] Helen Brayshaw. "Aborigines of the Hunter Valley: A study of Colonial Records". *Scone and Upper Hunter Historical Society.* Scone: Bicentennial Publication No. 4 (1987): 41.

In the Port Stephens area, trade between Aboriginal people of the upper regions of the Hunter River and others was described by Robert Dawson of the Australian Agricultural Company as follows:

> I understand from our natives, that exchanges of articles sometimes took place between the coast natives and those residing in the interior. Iron tomahawks, sea-shells, with which they scrape and sharpen their spears, and pieces of glass, which they use for that purpose whenever they can get them, were thus frequently exchanged for opossum skins, and sometimes for the belts of yard ready manufactured, as well as a small opossum band of net-work, which they wear on their forehead when in full dress.[23]

Stone trade within the Sydney region was noted in the 1930s by W. W. Thorpe of the Australian Museum. Thorpe suggested petrified wood discovered at North Cronulla was sourced from an area about 80 kilometres to the south.

> In the 1960s studies of stone materials from archaeological sites in the south Sydney district and Royal National Park proposed southern sources for the raw materials. A 1969 study of flaked stone artefacts from Curracurrang 1, by geologist David Branagan and archaeologist Vincent Megaw, considered that a dark grey and black 'chert', the commonest material in the upper two layers dating to the last 4500 years, may have come from as far as Batemans Bay (about 190 km away). The unique nature of one of the volcanic rocks indicated another source was at Minnamurra (60 kms away). The south coast and its hinterland were also identified as the sources of two materials for stone hatchet heads found on the Kurnell Peninsula.[24]

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[23] Dawson, 1830:135-36, in Brayshaw. "Aborigines of the Hunter Valley": 41.
[24] Attenbrow, *Sydney's Aboriginal past*, 123-124.

Archaeologist Isabel McBryde's observations whilst surveying the New England area situated just north of the Greater Hunter region in NSW, are useful when considering the remaining knowledges of the traditional medicinal trade undertaken at both Burning Mountain and Bulahdelah Mountain. As are McBryde's observations of Aboriginal trade in South-Eastern NSW.[25] In her archaeological work, McBryde ceased

> thinking of the Aboriginal past as 'a dream the world breathed sleeping and forgot' and started seeing it as a living heritage, maintained through powerful connections to country, 'preserved faithfully by a small community' and 'now the focus of a revival of interest in traditional culture and values'.[26]

***Kopurraba's Kopurra*: traditional medicinal tablet production**

In the early nineteenth century, missionary Reverend Lancelot Threlkeld observed in the upper Hunter region what he described as a 'volcano'. The 'volcano' was called *Kopurraba*[27] by the Aboriginal people of Lake Macquarie, who utilised the mount's clay-like mineral ore, known to them as *Ko-pur-ra*[28]. Threlkeld noted *Kopurraba* was the name of the place:

> from which the [A]borigines obtain the ko-pur-ra, a yellowish earth which they wet, mould up into balls, and then burn in a strong fire in which it changes into a brilliant red, something like red ochre.[29]

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[25] Isabel McBryde. "Exchange in South Eastern Australia: An ethnohistorical perspective". *Aboriginal History* 8: 1/2 (1984):132-153.
[26] Billy Griffiths. *Deep Time Dreaming: Uncovering Ancient Australia*. Carlton: Black Inc. 2018, 38.
[27] Or *Ko-pur-ra-bar* as quoted by L. E. Threlkeld. "Aboriginal Place Names. Royal Anthropological Society of Australasia", *Science of Man and Journal of the Royal Anthropological Society of Australasia*. 5 (3), (April 22, 1902): 13, or *Kuparrpa* as quoted by A. Lissarague, "A salvage grammar and wordlist of the language from the Hunter River and Lake Macquarie". Nambucca Heads: Muurrbay Aboriginal Language and Culture Cooperative. 2006, 63.
[28] *kuparr* is the Wonnarua word meaning *ochre, red*.
[29] Threlkeld. "Aboriginal Place Names", April 22, 1902: 13.

The Wonnarua people would mix *Ko-pur-ra* with kidney fat from the kangaroo, emu oil or another carrier emollient. The Wonnarua people were likely the first culture on earth to utilise sulphur medicinally, pre-dating sulphur's use by the ancient Egyptians[30]. *De Medicina*, the first-century medical treatise by Aulus Cornelius Celsus notes that the Romans would bathe in sulphur as a treatment for skin blemishes.[31]

> When applied to the skin, sulfur is thought to interact with cysteine present in the stratum corneum and forms hydrogen sulfide. Hydrogen sulfide can then break down keratin, thus demonstrating sulfur's keratolytic activity. Sulfur also has an inhibitory effect on the growth of *P. acnes* as well as *Scaroptes scabiei*, some *Streptococci*, and *Staphylococcus aureus*.[32]

Sulphur's antibacterial effect has been documented and several studies have noted sulphur containing compounds' effectiveness in treating complaints of the skin.[33]

The treatment of wounds with clay and fat has been documented in Western Australia.

> Red clay (known as *wilgi*) or white pipeclay, while still hot, were mixed with fat of any sort or emu oil and applied in paperbark, a gumleaf or a wad of possum fur to wounds. Clay was also applied to sore eyes.[34]

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[30] An important Egyptian medical papyrus called the *Ebers Papyrus,* dated at 1550 BCE, mentions the first recorded use of a sulphur ointment used by the Egyptians to treat blepharitis, a common ocular condition. See A. Hallmann-Mikołajczak., Papirus Ebersa. Ksiega wiedzy medycznej egipcjan z XVI w P.N.E [Ebers Papyrus. The book of medical knowledge of the 16th century B.C. Egyptians]. *Archiwum historii i filozofii medycyny*, *67*(1), (2004): 5–14.
[31] Ariel Eva Eber, Marina Perper, Robert Magno, and Keyvan Nouri. "Acne Treatment in Antiquity: Can Approaches from the Past be Relevant in the Future?" *International Journal of Dermatology* 56: 10 (2017): 1071-1073.
[32] Eber et al. "Acne Treatment in Antiquity": 1071-1073.
[33] J. Q. Del Rosso. "The use of sodium sulfacetamide 10%-sulfur 5% emollient foam in the treatment of acne vulgaris". *Journal of Clinical and Aesthethetic Dermatology.* Aug 2 (8) (2009): 26-29; Z. D. Draelos. "The multifuntionality of 10% sodium sulfacetamide, 5% sulfur emollient foam in the treatment of inflammatory facial dermatoses". The Journal of Drugs in Dermatology (JDD) 9 (2010): 234-236; M.W. Trumbore, J.A. Goldstein, R.M. Gurge. "Treatment of papulopustular rosacea with sodium sulfacetamide 10% sulfur 5% emollient foam". *The Journal of Drugs in Dermatology* (JDD) 8 (2009): 299-304.
[34] J. E. Hammond. *Winjan's people: The story of the South-West Australian Aboriginals*, Perth: Hesperian Press. 1980, 58-9.

The Wonnarua were noted to have plastered cuts and wounds with the wet *Ko-pur-ra*.[35] Both the men and the women would also utilise this substance as a body paint worn during ceremonial dances,[36] which was also noted to be used around Newcastle to paint bodies for ceremonial occasions.[37]

Traditionally, different types of clays were used in differing ways to treat a variety of maladies. Aboriginal Australians were cognisant of clays' adsorptive qualities and the pharmaceutical properties of both clays and charcoal. Watkin Tench, a young captain with the First Fleet, in his account of colonial life records having witnessed Aboriginal people using medicinal clays for burns:

> If they get burned, either from rolling into the fire when asleep, or from the flame catching the grass on which they lie (both of which are common accidents) they cover the part with a thin paste of kneaded clay, which excludes the air and adheres to the wound until it be cured, and the eschar falls off.[38]

The moulding and roasting of clay-like balls described by Threlkeld is echoed in several historical descriptions of the manufacturing process that the *karadji,* used to produce prescription pills and tablets. Burning Mountain's various pharmaceuticals were traded to Aboriginal people from many nations.[39]

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[35] Royal Anthropological Society. "Notes on the customs and dialect of the Wonnah-ruah Tribe".
[36] Threlkeld. "Aboriginal Place Names": 13.
[37] Brayshaw, "Aborigines of the Hunter Valley", 86, 88; Dunn, *The Convict Valley*, 15.
[38] Watkin Tench. *1788*. Melbourne: The Text Publishing Company, 2012, 257.
[39] "Winjennia: The story of Australia's burning mountain". Melbourne: Queen City Printers Pty. 1920, see also Mark Dunn. A Valley in a Valley: Colonial struggles over land and resources in the Hunter Valley, NSW 1820-1850. Thesis submitted in fulfilment for the degree of Doctor of Philosophy, University of New South Wales, June 2015: 61-62. https://doi.org/10.26190/unsworks/18488

> The use of *Ko-pur-ra* around Lake Macquarie and Newcastle, which was first gathered from the upper reaches of the valley, is further evidence of trade routes and connections across the region.[40]

The *karadji* manufactured and prescribed pharmaceutical pills for a variety of ailments and complaints:

> Queensland Aborigines of the northwest and central districts apparently used huge clay or mud pills, of which one or two at a time were prescribed for diarrhoea.[41]

The *karadji* would take the pure clays sourced from unsoiled areas and add specific therapeutic ingredients forming small balls, which were then roasted or boiled, and sometimes crushed with stones, before being kneaded on a piece of bark into pills.[42] Different pills were manufactured for colds, headaches, constipation, and other ailments.[43] In Victoria, 1861 Aboriginal people were observed taking pills made from wattle bark and gum, both morning and night, to help with dysentery.[44] Convenient and easily carried around, traditionally manufactured pills were prescribed by the Aboriginal doctors as the need arose.[45] Tablets manufactured and prescribed by Aboriginal doctors as observed and described by noted anthropologist and physician Roth were, 'at least twice the size of those to be seen at any pharmaceutist's'[46] and were often taken one or two at a time.[47]

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[40] Dunn. "A Valley in a Valley": 61-62.
[41] W. E. Roth, 1987: 163 cited in M. J. Rowland, "Geophagy: an assessment of implications for the development of Australian Indigenous plant processing technologies", *Australian Aboriginal Studies* 1. (2002): 55. C
[42] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land.* April 23, 1937, 16, http://nla.gov.au/nla.news-article104148007; "Strange Ways of the Aborigines: Native Chemistry". *Sydney Mail.* March 4, 1936, 46. "Outdoor Australia." *Sydney Mail*. July 28, 1926, 22.
[43] "Australiana." *The World News.* January 30, 1935, 13.
[44] Cahir et al., *Aboriginal biocultural knowledge in south-eastern Australia*, 220.
[45] "Aboriginal Cures: Wiles of the Medicine Men." *The Mail*. May 10, 1930, 19. "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land.* April 23, 1937, 16. "Strange Ways of the Aborigines: Native Chemistry." *Sydney Mail.* March 4, 1936, 46; "Outdoor Australia." *Sydney Mail*. July 28, 1926, 22.
[46] W. E. Roth. "Superstition, magic and medicine," *North Queensland Ethnography* 5, (1903): 1-42 as cited by Cribb and Cribb. *Wild Medicine*, 208.
[47] Cribb and Cribb. *Wild Medicine*, 208.

Other observers noted the pills were compounded from soft clay or mud, and botanicals or mineral substances were often added.[48] The Aboriginal apothecary's laboratory was fireside, where ingredients were boiled, roasted, crushed and rolled, as need be, and each little pellet was formed by hand.[49] Clays have been used in modern pharmaceuticals for excipient action and therapeutic results, due to the unique properties they contain.[50]

Clays used for plasters or to treat burns would be compounded with extracts of eucalyptus or other plants, or some mineral agency may be added, while clays for pills would be mixed with what were described as 'crude' chemicals.[51] Clays sourced from water sources in areas rich in natural minerals, such as the creeks, streams and waterholes of Burning Mountain and Bulahdelah Mountain, would have been naturally infused with those naturally available minerals, such as alum.

To compare Aboriginal use of alum and clays to other ancient cultures we can look to Greece which shows similar usage of the same minerals and clays. In antiquity, the people of Lemnos in north-eastern Greece in the Northern Aegean used clays to form pills containing some mineral agency. These pills, called *Lemnian Earth*, were made of different components, with each component contributing a certain medicinal property. These pills were highly valued in Greece and traded to the Romans as a cure for dysentery, ulcers and poison taken internally, among other ailments. *Lemnian Earth* contained kaolin and montmorillonite clays

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[48] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land,* April 23, 1937, 16.
[49] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods", 16.
[50] J. E. Browne, J. R. Feldkamp, J.E. White and S.L. Hem, "Characterization and Adsorptive Properties of Pharmaceutical Grade Clays," *Journal of Pharmaceutical Sciences* 69 (7) (1980): 816-823.
[51] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land.* April 23, 1937, 16; "Strange Ways of the Aborigines: Native Chemistry", *Sydney Mail.* March 4, 1936, 46; "Outdoor Australia," *Sydney Mail*. July 28, 1926, 22.

which would have absorbed toxins, whilst the alum contained within provided anti-bacterial properties and astringency.[52] Just as Aboriginal people recognised the medicinal value of the naturally occurring alum-infused waters at Wingen and Bulahdelah, the people of Lemnos created alum-infused waters by redirecting the water flow from a natural spring that's waters were naturally rich in clay and alum to a pit. The alum was absorbed by the clays, which formed *Lemnian Earth* the medicine, which consisted of around 75% clay, 20% alum and 5% hematite. The kaolin clays of Wingen and Bulahdelah would be suited to absorbing the alum in a similar way to the formation of *Lemnian Earth* using the water pit designed by the ancient Greeks to aid the manufacture of this medicine. Minerals do not exist in isolation, which is certainly the case with kaolin (kaolinite) and montmorillonite clay deposits, which contain alumina.[53] Dense massive kaolinite formed alongside alunite at Bulahdelah Mountain,[54] which gave the Worimi *karadji* access to both abundant mineral and clay resources, a suitable workshop and a water source as required for them to have manufactured clay pills and tablets similar to the Greek's *Lemnian Earth*.

The specific clays traditionally selected for medicinal use by Aboriginal people, although sourced from different areas by different groups, generally all have a high silica and/or aluminium content.[55] Aboriginal people traditionally used clay for the treatment of stomach upsets and employed the use of clay poultices with efficacious results.[56] The literature shows that while some attention has been paid the Aboriginal practice of geophagy, (or clay-eating),

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[52] A. J. Hall and E. Photos-Jones, "Accessing Past Beliefs and Practices: The Case of Lemnian Earth", *Archaeometry,* 12/2008, 50 (6), (December 2008), 1034-1049.
[53] G. Haferburg and E. Kothe. "Microbes and Metals: Interactions in the Environment", *Journal of Basic Microbiology*, 47 (6), (2007): 453-467. doi:10.1002/jobm.200700275 (ISSN)1521-4028.
[54] R. Evans and B. England. "Alum Mountain Bulahdelah. Geo-Log 2015", *Journal of the Amateur Geological Society of the Hunter Valley* (September 19, 2015,), 26-29; R. B. Jenkins and J. E. Nethery, "The development of Early Permian sequences and hydrothermal alteration in the Myall Syncline, Central Eastern New South Wales," *Australian Journal of Earth Sciences* (1992): 39: 223-237, https://doi.org/10.1080/08120099208728016
[55] Rowland, "Geophagy": 51-66.
[56] Cahir et al., *Aboriginal biocultural knowledge in south-eastern Australia*; Rowland, "Geophagy," 51-66.

there is a notable gap in academic literature around traditional Aboriginal pill and tablet manufacture.[57] Certain clays have been proven to kill human pathogens that have been shown to be antibiotic-resistant, and may now present a viable alternative to known antibiotics.[58]

The use of medicinal clays dates back to 2,500 BCE.[59] Geophagy was first recorded by Aristotle.[60] The Romans first recorded the medicinal uses of clay minerals as early as 60 BCE,[61] however, geophagy is believed to have arrived on this continent some 40,000 years ago; the practice suggested to have helped First People rapidly adapt to many of this continent's native toxic plants.[62]

Geophagy was viewed for many years as a negative behaviour, which prejudiced how early non-Indigenous observers interpreted the practice.[63] Scientific study now recognises that certain clays or earths adsorb (or adhere to the surface of) toxins, therefore reducing the toxicity of particular foods.[64] Evidence of the medicinal use of clay and charcoal by

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[57] Rowland, "Geophagy", 51-66; A. Barr, J. Chapman, N. Smith and M. Beveridge, *Traditional Bush Medicines: An Aboriginal Pharmacopoeia,* Melbourne: Greenhouse Publications, 1998; H. W. Eastwell. The State of Risk for Psychiatric Illness in the Tribes of North Australia, Unpublished thesis for the Degree of Doctor of Medicine, University of New South Wales, 1978; H. W. Eastwell. "A Pica Epidemic: A Price for Sedentarism among Australian ex-hunter-gathers", *Psychiatry* 42 (3), (1979): 264-273; H. W. Eastwell. "Pica: Eating Non-food", *Aboriginal Health Worker* 8 (2), (1984): 23-24; H. L. Roth, *The Aborigines of Tasmania*, London: Kegan Paul, Trench, Trubner and Co, 1890; W. E. Roth. "Superstition, magic, and medicine. North Queensland Ethnography." *Bulletin* 5, Brisbane: Queensland Government Printer,1903: 1-42 as cited by Cribb and Cribb. *Wild Medicine*, 208; E. M. Bateson and T. Lebroy. "Clay eating by Aboriginals of the Northern Territory", *The Medical Journal of Australia,* 1 (1.), (1978): 1-3.
[58] S. Londono, H. Hartnett, and L. Williams. "Antibacterial Activity of Aluminium in Clay from the Colombian Amazon," *Environmental Science and Technology* 51(4), (2017): 2401-2408. doi: 10.1021/acs.est.6b04670
[59] R. E. Ferrell (Jr.), "Medicinal clays and spiritual healing," *Clays and Clay Minerals* 56 (6), (2008): 751-760.
[60] W. C. Mahaney, M. W. Milner, Mulyono Hs, R. G. V. Hancock, Susanne Aufreiter, Matthias Reich and Michael Wink, "Mineral and chemical analyses of soils eaten by humans in Indonesia". *International Journal of Environmental Health Research.* 10. (2000): 93-109.
[61] M. I. Carretero, "Clay minerals and their beneficial effects upon human health: A review", *Applied Clay Science* 21 (2002): 155-163.
[62] Rowland, "Geophagy", 51-66.
[63] Rowland, "Geophagy", 51-66.
[64] J. F. Oates. "Water-plant and soil consumption by guereza monkeys (*Colobu guereza*): A relationship with minerals and toxins in the diet". *Biotropica,* 10. (1978): 2441-2253; T. Johns. *With Bitter Herbs They Shall Eat It: Chemical ecology and the origins of human diet and medicine*, Tucson: University of Arizona Press, 1990; T. Johns and M. Duquette. "Detoxification and Mineral Supplementation as Functions of Geophagy". *American Journal of Clinical Nutrition,* 53. (1991): 448 – 456; S. Aufreiter, R. G. Hancock, W.C. Mahaney, A. Stambolic-

Aboriginal people demonstrates they were cognisant of the pharmaceutical properties of clays and charcoal and conscious of clays' complex properties. Trade in clays highlights the value placed on medicinal clays by Aboriginal people; and while the Aboriginal trade in clay has not been investigated or researched in any detail, it certainly warrants further research and investigation.

Kopi,[65] a soft, white stone used to make a traditional medicine, was also used as a paint, as plaster and to create ceremonial items shaped to liken emu eggs.[66] This traditional medicine was observed being collected in the early twentieth century at Queensland's Taroom Aboriginal Reserve.[67] Kopi is described as being 'much like alum',[68] and 'a white gypsum clay'[69] which was heated, ground into a fine powder and then mixed with water and drunk as a multiuse medicinal treatment.[70]

> Mineral substances were among the earliest to find a place in the ancient chemical technology of mankind. As in the case of alum, some minerals, because of their availability and also because of their frequent occurrence in a fairly pure form, afforded their experimenters reproducible results. Gypsum, soda and salt assumed such a position in antiquity[71]

Robb, and K. Sanmugadas. "Geochemistry and mineralogy of soils eaten by humans". *International Journal of Food Sciences and Nutrition* 48 (5), (September, 1997): 293-305; Rowland. "Geophagy", 51-66.

[65] Alternate spellings include *copi, kopai* and *copai*. Kopi is the Aboriginal word for calcium sulphate, or white gypsum, a sulphate mineral, see [Figure 10].

[66] Rowland. "Geophagy", 51-66; S. L'Oste-Brown and L. Godwin, "'Living under the Act': Taroom Aboriginal Reserve 1911 – 1927", *Cultural Heritage Monograph Series, Volume 1*, Brisbane: Queensland Department of Environment and Heritage,1995.

[67] L'Oste-Brown and Godwin. "'Living under the Act'".

[68] "Customs of the Queensland Blacks," *The Australasian,* April 8, 1905, 31.

[69] Bruce Pascoe. *Dark Emu: Aboriginal Australia and the birth of agriculture*. Broome: Magabala Books Aboriginal Corporation. 2018, 152.

[70] L'Oste-Brown and Godwin. "'Living under the Act'"; Rowland. "Geophagy", 51-66.

[71] M. Levey, "Gypsum, Salt and Soda in Ancient Mesopotamian Chemical Technology", *Isis* 49 (3) (September 3, 1958): 336-342.

A 'white unctuous pipe-clay[72]' was reported to have been traditionally ingested to counter-act the strong laxative effect of certain traditional food in a similar way that a white clay was ingested for anti-diarrhoeal purposes amongst many Aboriginal groups of the Northern Territory[73]. This practice was also observed by Roth[74] in parts of Queensland, where Roth[75] states that kaolin (hydrous silicate of alumina), or white clay, is 'esteemed, both at the Bloomfield and at Cooktown'.

The Aboriginal pharmacopoeia certainly encompassed the use of clays medicinally, either as a carrier for some mineral or plant agent in pill form, or eaten to ease dysentery, diarrhoea, dyspepsia or digestive disease and discomfort.[76] The modern investigation has only just begun into the chemical properties of clay that may prove important for medicine as their results indicate certain natural clay minerals are able to have specific and marked effects on microbial populations.[77]

Aboriginal people utilised differing minerals to manufacture effective pharmaceuticals; and that their understanding of chemistry was sophisticated, allowing them to convert alum into its crystallised form for medicinal and other purposes. The manufacture of crystals proving Aboriginal people did indeed know how to convert one substance to another, and that their use of minerals such as alum, sulphur and gypsum, which do lend themselves to immediate use as pigments, were not solely utilised for that purpose, but also utilised as

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[72] H. M. Lefroy. "Memoir and Journal of an Expedition organized by the Colonial Government of Western Australia, for the purpose of exploring the Interior of the Colony Eastward of the District of York." The *Inquirer and Commercial News, September* 2, 1863, 2.
[73] A. Barr, J. Chapman, N. Smith, and M. Beveridge, *Traditional Bush Medicines: An Aboriginal Pharmacopoeia,* Melbourne: Greenhouse Publications, 1998, 218.
[74] Roth. "The Queensland Aborigines, Vol. 1"; Roth, "The Queensland Aborigines 1901 – 1908", 9.
[75] Roth. "The Queensland Aborigines 1901 – 1908", 9.
[76] See Rowland. "Geophagy," 51-66 and "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land.* April 23, 1937. 16.
[77] L. B. Williams, M. Holland, D. Eberl, T. Brunet, and L. Brunet de Courrsou., "Killer Clays! Natural antibacterial clay minerals", *Mineralogical Society Bulletin* (April 2004): 3-8.

pharmaceuticals.[78] Aboriginal people possessed a knowledge of, and utilised, chemistry utilising techniques such as calcination, pyrolysis, fermentation and combustion,[79]. Aboriginal people's knowledge of chemistry extended to, and included, the processes required to crystallise alum, utilise the fumes and vapours of Burning Mountain and to manufacture pharmaceuticals using sulphur, sulphate minerals and sulphate clays.

Aboriginal people have a deep understanding of various minerals and their properties, having utilised stone and high-quality mineral deposits for trade over great distances, such as ochre.[80] Historically, the location of valuable rock and mineral deposits, such as Burning Mountain's mineral ore, were well known to Aboriginal people. These locations played a significant role in trade transactions between different nations. Aboriginal people travelled hundreds of kilometres to Burning Mountain to seek out a variety of healing treatments,

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[78] NSW National Parks and Wildlife Service, *Burning Mountain Nature Reserve: plan of management,* NSW National Parks and Wildlife Service and Stewart McMahon, Hurstville: The Service, 1993, 3; Umwelt (Australia) Pty Ltd, Bulahdelah Mountain: Aboriginal Place Nomination Assessment. A report prepared for NSW National Park and Wildlife Service. Ref: 1747/R01/V1. Incl. information gleaned from interviews with Aboriginal Elders regarding Bulahdelah Mountain circa April-June 2003 (June 2003); Cara Cross, "Our Country, our healer: Aboriginal apothecaries of Burning Mountain", *Aboriginal History* 45 (2021): 83-108; L'Oste-Brown and Godwin. "'Living under the Act'".

[79] See J. O. Babayemi, K. T. Dauda, D. O. Nwude and A. A. A. Kayode, "Evaluation of the composition and chemistry of ash and potash from various plant materials: A review", *Journal of Applied Sciences*, 10(16), (2010): 1820-1824; V. Jiranek and R.Mills, "Revealing the science of Aboriginal fermentation.", University of Adelaide, October 21, 2016; V. Jiranek and M. K. M. O'Brien, "Research Tuesdays: First Ferment.", University of Adelaide, 2018; S. H. Lee, P. S. H'ng, M. J. Chow, A. S. Sajap, B. T. Tey, U. Salmiah and Y. L. Sun, "Effectiveness of pyroligneous acids from vapour released in charcoal industry against biodegradable agent under laboratory condition." *Journal of Applied Sciences*, 11(24) (2011); New South Wales Department of Primary Industries, n.d. *Industrial mineral factsheets: Iron oxide pigments.* https://www.resourcesandgeosciences.nsw.gov.au/__data/assets/pdf_file/0006/237849/Ironoxide.pdf; A. Ratsch, K. J. Steadman and F. Bogossian, "The pituri story: A review of the historical literature surrounding traditional Australia Aboriginal use of nicotine in Central Australia." Journal of Ethnobiology and Ethnomedicine, 6(1), 26. 2010; "Bunya trees significant to Aboriginal culture." *Sunshine Coast Daily*, June 9, 2016; S. Union, "Revealing the science of First Nations fermentation processes" 2016, http://nationalunitygovernment.org/content/revealing-science-first-nations-fermentation-processes; M. Whitehouse, "New study to look at Indigenous Australian fermentation", ABC 2016; A. Williams and T. Sides, *Wiradjuri Plant Use in the Murrumbidgee Catchment. Wagga Wagga: Murrumbidgee Catchment Management Authority.* 2008, see also Australian Curriculum, Teacher Background Information, Science Understanding accessed from: https://www.autraliancurriculum.edu.au/TeacherBackgroundInfo?id=56821.

[80] Western Australia's Wilgie Mia is the world's oldest continuous mining operation, and whilst an example of deep underground mining, Aboriginal people historically used the techniques of both quarrying and mining using sophisticated extraction techniques where necessary. https://www.ancient-origins.net/ancient-places-australia-oceania/wilgie-mia-ancient-mine-where-ochre-runs-red-kangaroo-blood-001425

which were likely utilised as an item of trade by the Wonnarua for as long as the mountain has been burning and the Wonnarua people were present.[81]

Burning Mountain, considered sacred in Aboriginal lore, was held in high esteem by many different Aboriginal nations for the healing properties of the mineral substances deposited there. The Wonnarua people, who traditionally wore possum skin cloaks, girdles made from spun possum hair and a Nautilus shell necklace cut into an oval shape and fastened by a length of string,[82] welcomed people from other Aboriginal nations to the mount for trade and ceremonies. Aboriginal art adorned some of the mount's rock surfaces, depicting kangaroos, wallabies, birds, snakes and other animals.[83] The ethnographic record suggests continual Aboriginal occupation of Burning Mountain and the surrounding land.[84] Traditional life on the mount saw work delineated by gender: the Wonnarua men would hunt, and the Wonnarua women spent their days crushing the ore in a traditional mortar and pestle, afterwards mixing it with water or animal fat[85] so that it was ready for pharmaceutical use.

Scant archaeological research has been undertaken in the Hunter Valley [86] yet, whilst the Australian archaeological database is sparse, Greater Australia has been occupied for more than 40,000 years.[87] Archaeologically ancient medicinal products, and any waste by-products

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[81] *Winjennia: The story of Australia's burning mountain*. Melbourne: Queen City Printers Pty. 1920.
[82] Royal Anthropological Society of Australasia. "Notes on the Customs and Dialect of the Wonnah-Ruah Tribe", *Science of Man and Journal of the Royal Anthropological Society of Australasia* 1 (7), (22 August 1898): 18.
[83] "The Upper Hunter District. Aberdeen and Wingen. Where the Favourites are Bred. 'The Devil's Smoke Stack'. Australia's Solitary Burning Mountain". *The Daily Telegraph*. October 8, 1910, 15.
[84] Evidence of several ceremonial grounds; carved and scarred trees; a burial; a stone arrangement; an engraving site and open sites have been privately documented. NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve.*
[85] Usually kidney fat from the kangaroo or emu oil. See Threlkeld, "Aboriginal Place Names", 13.
[86] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve,* 4.2. See also Brayshaw, "Aborigines of the Hunter Valley".
[87] H. Lourandos. *Continent of Hunter-Gatherers: New perspectives in Australian Prehistory,* Cambridge: Cambridge University Press, 1997, 326.

of their manufacture, often become indistinguishable from their environments as, over time, they simply return to the soil upon exposure to the elements. [88] A report authored by NSW National Parks and Wildlife Service states while tools used by the Wonnarua people may remain as potential archaeological finds, no systematic survey for Aboriginal sites of Burning Mountain Nature Reserve has been undertaken. [89] Given the potential of Burning Mountain's longevity of Aboriginal occupation, an archaeological survey seems an urgent next step towards discovering more of this unique site's history.

Sacred spaces, such as Burning Mountain, are often interlinked with cultural identity and traditional knowledge. Burning Mountain has been tied to the Malamulang story – the Dharawal and Dunghutti story of the Seven Sisters. The legend of the Seven Sisters exists in many forms (including songlines, rituals and dances) across many different Aboriginal nations and, like stories relating to other unique geological formations such as the Great Barrier Reef, the story has been argued to be many thousands of years old.[90] For Aboriginal people, it is imperative these sacred spaces are recognised as a living part of Aboriginal culture as they provide a lifeline between our ancestors and their traditional way of life, Country, and our communities today.

Burning Mountain has given rise to Aboriginal legends, in particular the legend of the Wingen Maid. The Wingen Maid is the name given to the southern rockface of the Wingen Maid Nature Reserve, found to the west of Burning Mountain. This distinctive rockface presents as a large outcrop of sandstone, which when viewed from certain vantage points,

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[88] Photos-Jones. "From mine to apothecary", 418-433.
[89] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve,* 4.2.
[90] See P. D. Nunn and N. J. Reid, "Aboriginal Memories of Inundation of the Australian Coast Dating from More than 7000 Years Ago." *Australian Geographer,* 47:1. (2016): 11-47, doi: 10.1080/00049182.2015.1077539; M. Andrews. *The Seven Sisters of Pleiades: Stories from Around the World*, North Melbourne: Spinifex Press, 2004.

resembles the profile of a seated woman. The legend of the Wingen Maid tells of the Kamilaroi people, who resided north of the Liverpool Range, who sent a wife-raiding party to kidnap Wonnarua women from the south. The Wiradjuri people, situated in the west, warned the Wonnarua of the Kamilaroi plans. Elite Wonnarua warriors went out to meet the Kamilaroi's raiding party, however one Wonnarua woman's husband did not return. Devastated, the new widow asked the creator, Biame, to end her life. Instead, Biame set the bereft woman in stone. Oral tradition states the desolate widow ignited Burning Mountain's flaming coal seam with tears of fire shed grieving for her husband, lost whilst defending her in battle.[91]An Aboriginal oral history speaks of a severely wounded Wonnarua warrior who, retreating to Burning Mountain after battle with wounds that would normally prove fatal, bathed in and drank from the mountain's mineral-infused waters. The wounded warrior soon noticed his bleeding had ceased and, within a few days, all his wounds had healed. His miraculous recovery credited to the mount's rare curative mineral deposits.[92] This oral history is of immeasurable value and likely depicts the events that first alerted the Wonnarua to Burning Mountain's unique medicinal mineral resources. Patrick D. Nunn and Nicholas J. Reid have presented evidence of collections of Aboriginal oral stories that may date back 7,000 years and assert, 'Given the range of current threats to oral traditions, globally as well as in Aboriginal Australia, it would seem to be a priority to rediscover these stories'. [93]

The waters of Burning Mountain's creeks and waterholes have high sulphur levels and contain various other minerals. [94] Burning Mountain's gases precipitate naturally on the edges

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[91] *Winjennia: The story of Australia's burning mountain*, 1920; "The Stone Woman of Wingen." *Lake Wakatip Mail*. Issue 2446. (1902, December 31); NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve*.
[92] This oral history, relayed to the colonists in the Wingen region, was published in Winjennia Remedies Proprietary Company's (one of the remedy's commercial producers) booklet, *Winjennia: The story of Australia's burning mountain,* 1920.
[93] Nunn and Reid. "Aboriginal Memories of Inundation,". 42.
[94] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve*.

of the crevices, and rain dissolves these minerals and washes them into the nearby creek. As the oral history of the wounded warrior suggests, Aboriginal people traditionally bathed in these healing mineral-infused waters, cognisant of their healing properties.[95]

The lithotherapeutic medicines of Burning Mountain

In this section we will look at the specific lithotherapeutic medicines the Wonnarua were manufacturing on Burning Mountain. The manufacture of these lithotherapeutic medicinal items required the unique, mineral ore to be milled and levigated for use in the liquid extract, tablet formation and the production of the ointment. The key therapeutic products produced from the ore included healing waters (used as a drink and/or as an external wash or disinfectant), ointment (made with an emollient such as emu oil and traditionally applied with a feather) and mud packs (made from a mixture of water and the levigated ore that was applied to treat burns and surface wounds). The process Threlkeld noted was likely the production of medicinal tablets using the powdered ore. Traditionally, sulphate clay would be wet, often with mineral substances added to the mixture, before the combination was moulded into balls or large tablets and then roasted.[96] The *karadji* would generally provide a prescription to the patient stating how many tablets should be taken, when, and for how long.[97]

The area around the chasms of Burning Mountain was littered with naturally formed sulphur crystals. Crystallised sulphur would have proven itself convenient to both store and carry. Medicinal crystals, and those used for medical purposes such as sharpened quartz crystal used

[95] "The Winjennia Remedies: Analytical Records from the Lancet Laboratory." *The Lancet* 160: 4124, originally published as Vol.2, Issue 4124. (September 13, 1902): 751-752.
[96] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land.* 1937, 16.
[97] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". 16; Roth, "Superstition, magic, and medicine": 1-42 as cited in Cribb and Cribb. *Wild Medicine*, 208.

like a scalpel, were traditionally safeguarded by the *karadji*. Naturally occurring sulphur crystals could be easily crushed and used as needed, with water or emollient added before use. Burning Mountain offered Aboriginal people a profusion of both alum and sulphur of astounding purity that collectively formed the mount's unique mineral ore. This ore offered immense medical benefit to Aboriginal people and was an essential part of the formula used to produce a variety of pharmaceutical items at the site.[98]

The Wonnarua's pharmaceutical items healed a vast array of health complaints, making them an extremely valuable items of trade. Aboriginal nations that possessed an abundant supply of a relatively difficult to obtain mineral, such as sulphur or alum, occupied an often unequalled trading position with people from other Aboriginal nations traveling large distances to secure such valuable items for their communities.[99] Trade in ancient lithotherapeutic medicinal items required detailed economic organisation, including specific infrastructure, logistics of storage, packaging, and transport; the guarding of intellectual property and facilitating the impartation of empirical knowledge to the end consumer. Generation after generation of Aboriginal people from Queensland's Cape York to the Great Australian Bight were acquainted with Burning Mountain and its healing substances. Among the many tribal groups that were known to visit the smoking summit for its healing elements were the Kamilaroi[100] and the Yugilbar.[101] For centuries prior to the invasion of the Europeans, the wounded, injured, sick and suffering would be brought to the mountain from great distances and from neighbouring Country alike. Men, women, and children came to the mountain seeking

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[98] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve,* 2.2.2.
[99] K. Burchester. *Popular prospecting: A Guide To Australian Minerals.* Sydney: A.H. and A.W. Reed Pty Ltd.,1972, 31; *Winjennia,* 1920.
[100] One of the four largest Indigenous nations, the Kamilaroi people's lands extended from New South Wales to southern Queensland.
[101] "Around the district". *The Scone Advocate*. September 8, 1905, 2. The reference to the Yugilbar may refer to the people of Yugilbar Station, which is found on the upper reaches of the Clarence River. The Kamilaroi and Yugilbar inhabited opposite sides of the Liverpool Range.

healing for a variety of ailments. After tribal wars, the slopes of Burning Mountain were covered in Aboriginal shelters as the wounded sought out the mount's healing minerals. The local settler-colonists considered it remarkable that, despite the many different tribal groups gathering at Burning Mountain, any conflict ceased, and all met like family on its inclines.[102]

[102] *Winjennia*, 1920. "The Burning Mountain at Wingen". *The Albury Banner and Wodonga Express*. April 29, 1887, 38.

Chapter 3

Colonisation and Burning Mountain's Aboriginal lithotherapeutic industry

"What you leave behind is not

what is engraved in stone monuments,

but what is woven into the lives of others.

Pericles

British colonisation resulted in the dispossession of traditional Aboriginal lands, which included sacred sites that were the source of certain multi-use mineral medicines. The colonists readily utilised the healing benefits of these prescriptions, which were subsequently commercialised by several non-Indigenous businesspersons and consortiums. Consequently, Aboriginal people were prevented from accessing areas containing these minerals, this dispossession harshly obstructing the Aboriginal trade in these important prescriptions and

abruptly halted much of the lithotherapeutic pharmaceutical industry of New South Wales's Aboriginal people.

'Discovery', dispossession, displacement and degradation

In March 1820, the first colonists arrived at Milbrodale, reaching the Upper Hunter Valley after travelling from the Hawkesbury River and Windsor overland. John Howe and Benjamin Singleton, like many colonists, were travelling inland in search of terrain suitable for agriculture, they found land in the Hunter Valley that was described as having the appearance of a natural parkland. At the beginning of 1822 the Hunter Valley was the realm of its traditional owners. Only a few years later in 1827 settlers in the area were managing more than 80,000 sheep and over 25,000 head of horned cattle.[1]

Non-Indigenous people flooded the area between 1822 and 1826 which disrupted, disturbed and ultimately dispersed Aboriginal groups in the region.[2] Government surveyor Henry Dangar is believed to be the first colonist to visit the Wingen area. In 1824 Dangar was confronted by the Wonnarua's Gea-Wegal *nurra*, after which he made his retreat.[3] Early non-Indigenous observers noted an annual pilgrimage would be made to Burning Mountain by local Aboriginal *nurras* and Aboriginal people from other nations often journeyed to the mount from great distances. [4] The Cambridge-educated Rev. Wilton's observations were published in *The Australian* in 1829:

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[1] R. Nolan. 'We want to do what they did': History at St Clair. Unpublished thesis submitted in partial fulfilment of the requirements for a BA (hons.), University of Sydney, Department of History. Sydney, NSW. 2016, 16.
[2] James Miller. *Koori, a will to win: the heroic resistance, survival and triumph of black Australia*. Sydney: Angus and Robertson, 1985, 31.
[3] "Murrurundi", *The Sydney Morning Herald*, February 8, 2004, https://www.smh.com.au/lifestyle/murrurundi-20040208-gdkq5v.html.
[4] *Winjennia*, 1920. An annual pilgrimage for minerals by Aboriginal people is also recorded in the chapter "Witana and the Ochres" in Charles P. Mountford's *The Dreamtime Book*. Exile Bay, NSW: ETT Imprint,

> The area of the mountain over which the fire is raging is at present about half an acre in extent. There were throughout it several chasms varying in width, from which are constantly emitted sulphurous columns of smoke, the margins of these, beautiful with efflorescent crystals of sulphur, varying in colour from the deepest red-orange to the palest straw colour, where alum predominates.[5]

In 1829 Sir Thomas Mitchell, who was then Surveyor-General Mitchell, visited Burning Mountain, returning in 1831. Mitchell details this visit in his report, "*A Journey in search of the Kindur, 1831-2*"[6]. Mitchell's most valuable contribution to the historical literature relating to Burning Mountain today is found in his sketched plan of the summit, detailing the position of the furnace. When this drawing is consulted alongside the description proffered by Wilton, Mitchell's sketch allows us to determine the exact position of the central furnace when Burning Mountain was first observed by non-Indigenous men. Around 1847, a colonist named Bennett witnessed 'a large tribe' camping a few miles from the mountain. From the older tribesmen Bennett learned that the fiery mountain had been burning before they were born, and long before the colonisers had appeared.[7] W. E. Abbott, a local grazier, studied the mountain continuously and his 1918 book, *Mount Wingen and the Wingen Coal Measures*, contains pertinent details about the movement of the Burning Mountain's chimney, or vent, area.[8]

2020, ISBN-10: 1922384291 where it is noted Aboriginal people groups made an annual pilgrimage to Wataku-wadlu to gather ochre.

[5] "The Volcanic Mountain". *The Australian*. March 20, 1829, 3.

[6] Sir Thomas Mitchell. *A Journey in search of the Kindur, 1831-2. Three Expeditions into the interior of Eastern Australia,* Vol 1 (of 2). 1831-2. EBook #12928. Release date: 27 July, 2004.

[7] R. Bennett. "Letter to the Editor of the Argus: Mount Wingen, near Murrurundi, New South Wales". *The Argus,* December 4, 1883, 5.

[8] W. E. Abbott, *Mount Wingen and the Wingen Coal Measures.* Sydney: Angus and Robertson, 1918.

The first colonists to live in the district surrounding Burning Mountain learned directly from the Aboriginal people of the medicinal value of the mountain's ore, which they used on themselves and their livestock with efficacious results.[9] Non-Indigenous people used this traditional Aboriginal cure to great effect on their livestock treating foot rot[10] and the sore shoulders and backs of their horses.[11] For Aboriginal people, colonisation brought with it the harsh realities of dispossession, devastating disease and the destruction of Aboriginal traditional life. Despite this, the Aboriginal people in the Wingen region generously shared life-giving traditional medical knowledge with the usurpers.[12]

On cold nights, the colonisers' livestock, like the kangaroos, were drawn in by the summit's warmth. Cattle, sheep and native wildlife alike would gather on the summit, the various animals found indiscriminately dotted around the edges of the smoking fissures.

Common ground

Cultural knowledge, colonisation and commercialisation

Enterprising colonists and interested investors sought to commodify Burning Mountain's Aboriginal remedies and were attempting to profit from these mineral medicaments as early as the mid-1870s. Around 1875 Messrs Muston and Co formed what came to be known as 'the Sydney syndicate'. After some difficulty, a mining lease was granted over the mountain in 1876.[13] Lynn Mills, the daughter of J Y Mills, one of the men in Muston's Sydney syndicate, stated:

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[9] "The Burning Mountain: Its Origin and History". *The Tamworth Daily Observer*. June 10, 1911, 3.
[10] Infectious pododermatitis, or foot rot, is a painful and contagious hoof infection that can affect cattle and sheep.
[11] "The Burning Mountain: Its Origin and History". 3.
[12] "The Burning Mountain: Its Origin and History". 3.
[13] "Extraordinary Mineral Discovery at Wingen". *Dunstan Times*. Issue 748. August 18, 1876, 3.

> My father and Mr Musten *(sic)* found that the [A]borigines of all this colony came from far and near to the mountain when suffering from any wounds or ills and would take a course of treatment from the earth, making mud packs and washes, and would stay there until cured.[14]

In 1876 Muston and Mills commissioned a chemist to perform tests on Burning Mountain's curative earth. Their ointment and liquid extract, named *Wingen*, were both based on Aboriginal therapeutic formulations and were sold to relieve tonsilitis, ulcers and open wounds.[15] Decades later, another syndicate would have Burning Mountain's ore tested. The Lancet Laboratory had analysed specimens of the ointment and lotion, and informed:

> The powder on analysis proved to contain chiefly the sulphates of iron and alumina, which are soluble in water, while the insoluble portion contained silica associated with alumina and ferric oxide. The ointment and lotion contained the soluble salts described.[16]

Messrs Muston and Co made an application to have the leasehold converted into a mineral conditional purchase, but the Minister of Mines refused this application. The Minister of Mines took the additional step of sending a letter to the Department of Lands requesting that no alienation be permitted, asking that the land be kept reserved for public purposes.[17] Despite this, the tenants and its employees obstructed both settlers and Aboriginal people from accessing Burning Mountain's ore.[18]

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[14] "Burning Mountain: Interesting Details". *The Southern Mail.* April 30, 1948, 8.
[15] "Burning Mountain: Interesting Details". 8.
[16] "The Winjennia Remedies: Analytical Records from the Lancet Laboratory." *The Lancet* 160: 4124, originally published as Vol.2, Issue 4124. (September 13, 1902): 751-752.
[17] "A Burning Mountain in New South Wales." *Colonist* (NZ*)* 27: XXVII, 3800 (December 28, 1883): 3.
[18] "Australia's Burning Mountain". *Advertiser.* August 19, 1927, 3; "The Burning Mountain at Wingen". *The Albury Banner and Wodonga Express.* April 29, 1887, 38.

In 1876 huts were under construction on the mount and it was anticipated that when the huts were completed, around fifty or sixty men would be employed to extract the medicinal ore.[19] A decade later, atop the summit sat the hut of one speculator with a notice affixed warning visitors against removing any of the mount's mineral substances.[20]

The site-specific nature of the Aboriginal lithotherapeutics of Burning Mountain saw dispossession severely interrupt the impartation of traditional lithotherapeutic knowledge through instruction and on-site educational training. Preventing Aboriginal people from accessing Burning Mountain's mineral ores effectively terminated Aboriginal people's ability to demonstrate the empirical processes of medicine manufacture.

As interest in the commercial exploitation of the mount's resources increased, Messrs Muston and Co refused an offer for the privilege of sale alone from a Melbourne firm of £1,000 per annum.[21] Muston's refusal of this offer may have been due to the mount's potential to produce iron ore. After a discovery of what was considered to be 'the richest iron ore in the world'[22] on Burning Mountain, many men were set to work for months seeking a larger lode that did not eventuate.[23] By 1881, Muston applied to have the mineral leases at Wingen to Messrs Moore cancelled, on the grounds of non-fulfilment of conditions.[24] Lynn Mills recalls

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[19] "Extraordinary mineral discovery At Wingen." *Dunstan Times*. Issue 748. August 18, 1876.
[20] "The Burning Mountain at Wingen." *The Albury Banner and Wodonga Express.* April 29, 1887, 38.
[21] "Australia's Burning Mountain." *Advertiser.* August 19, 1927, 3 (Afternoon). http://nla.gov.au/nla.news-article57755379; "Extraordinary Mineral Discovery at Wingen." *Dunstan Times*. Issue 748. 18 August, 1876.
[22] "The Burning Mountain: Its Origin and History". *The Tamworth Daily Observer*. June 10, 1911, 3. http://nla.gov.au/nla.news-article131476366.
[23] "Latest Mining. Evening News. Office. Tuesday." *Evening News*. February 6, 1872, 2; "Insolvency Court – Wednesday. (Before Mr. Chief Commissioner Deffell.) Meetings of creditors." *Empire.* March 26, 1874. 4; "The Burning Mountain: Its Origin and History", *The Tamworth Daily Observer*. June 10, 1911, 3. http://nla.gov.au/nla.news-article131476366.
[24] "Votes and Proceedings, NSW, No.1." *Legislative Assembly*. July 5, 1881. https://www.parliament.nsw.gov.au/hansard/Documents/HHP/Pre1991/Votes/Votes/Votes - 10th Parliament 1881.pdf

a large wholesale firm purchased the Aboriginal prescription from Messrs Muston and Co.[25] This was likely Winjennia Remedies Proprietary Company who launched their products in the early 1900s.[26]

In 1884 an interested party applied for conditional purchase of the Burning Mountain with the intention of building a health sanatorium to treat asthma and consumption with the vapours, and vapour baths to treat rheumatism and skin diseases. [27] The unsuccessful applicant was likely Quirindi chemist, Charles Allen who trademarked his product, *Charles Allen's Black Wingen Oils*[28] in 1885[29]. Allen's product was advertised as being available from 'any chemist or storekeeper[30]'. In late March of that year 1,000oz. of Charles Allen's product was donated to soldiers headed to the Soudan War. This unstinting donation received press attention speculating the remedy would 'become known to the hospital and ambulance corps of the British force, and its fame spread, and its use extended throughout the whole military world'.[31]

Commercial interests were aroused and interest shown from more than one sector when the effectiveness of the cures from Burning Mountain became known abroad.[32] In 1905:

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[25] "Burning Mountain: Interesting Details". *The Southern Mail.* April 30, 1948, 8.
[26] A New South Wales National Parks and Wildlife report dated February 1993 states the lease was for the mining of "silinite, *(sic)* a white by-product of sulphur". Selenite (commonly referred to as gypsum) is a white sulfate mineral, see "Wingen's Burning Mountain". *Australiana: The World's News*. February 21, 1948, 22 and N. Vass. *Burning Mountain keeps glowing after 500,000 years on fire.* Living Histories, September 4, 2018, https://livinghistories.newcastle.edu.au/nodes/view/57916.
[27] "Around the District". *The Scone Advocate*. September 8, 1905, 2; "Mount Winjet (*sic*). Australia's Burning Mountain: Winjennia, What It Is And All About It". *Geelong Advertiser.* April 21, 1906, 1.
[28] Advertising records show, "Charles Allen's Black Wingen Oils" or "Chas. Allen's Black Wingen Oils". "Around the District". *The Scone Advocate*. September 8, 1905, 2.
[29] Trade-mark. *New South Wales Government Gazette.* 1885, 3028.
[30] "Advertising", *Bulletin*.Vol.3, No.129, (October 31, 1885).
[31] "Valuable New Discovery: Black Wingen Oils". North Australian. April 3, 1885, 7.
[32] "Valuable New Discovery: Black Wingen Oils". 7; "The Burning Mountain: Its Origin and History". *The Tamworth Daily Observer,* June 10, 1911, 3. http://nla.gov.au/nla.news-article131476366

> a report got abroad that the so-called medicinal extract of Mount Wingen had not nearer origin to the mountain than the chemist's own backyard in Quirindi, where, it is said, he used to mix linseed oil and sulphuric acid in an oil drum.[33]

Prospector H. Healy, who was familiar with Burning Mountain, asserted Charles Allen's product was sourced from Burning Mountain.[34] With strong investor interest in commercially exploiting Burning Mountain's unique minerals and gases, these salacious claims about Allen were likely an act of sabotage. Allen had profitably sold this product from 1885 until the mid-1890s, however these allegations triggered the downfall of Allen's business.[35]

At the beginning of the twentieth century, a Melbourne syndicate, The Winjennia Remedies Proprietary Company[36], began selling products made from Burning Mountain's ore under the brand name *Winjennia*[37]. Winjennia had secured a mineral lease at Wingen from the Government, and by 1906 were exploring the idea of establishing a health sanatorium and vapour baths on the mount.[38] The company extracted the ore using long flumes that trapped the hot gases escaping from Burning Mountain's crevices. These flumes captured the fumes until they cooled, therefore precipitating their solid content.[39]

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[33] "Around the District". *The Scone Advocate.* September 8, 1905, 2.
[34] H. Healy. "To The Editor Of Walcha Witness". *The Walcha Witness and Vernon County Record*. November 2, 1895, 2.
[35] "Around the District". *The Scone Advocate.* September 8, 1905, 2; NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve: plan of management.* NSW National Parks and Wildlife Service and Stewart McMahon, Hurstville: The Service, 1993; "Advertising", *Bulletin* 3: 129 (October 31, 1885); "Quirindi." *The Maitland Daily Mercury,* August 6, 1895, 6. http://nla.gov.au/nla.news-article121319318
[36] Hereafter referred to as *Winjennia.*
[37] The NSW National Parks and Wildlife Service report dated February 1993, 4.2, incorrectly states the brand name as "*Wingenia*". It was instead named "*Winjennia*" – with 'Wingen' spelt as it is pronounced phonetically. The word "Winjennia" was trademarked in 1901 by Winjennia Proprietary Limited, see: "Trademarks". *Government Gazette of the State of New South Wales.* November 26, 1901, 9114. http://nla.gov.au/nla.news-article226390510.
[38] "Mount Winjet (*sic*). Australia's Burning Mountain: Winjennia, What It Is And All About It". *Geelong Advertiser.* April 21, 1906, 1.
[39] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve,* 2.2.2 and 4.2.

After taking out five first honours in their initial showing at the 1902 Royal Easter Show, the Winjennia Remedies Proprietary Company heavily advertised their range of products that included a medicinal soap, a cream (for conditions such as eczema), an ointment (for scalds, cuts and burns), a liquid extract liquid (for sore throats, blight, etc.) and a specific remedy for use on horses and cattle.[40] [See Figure 2]

Winjennia's products were an Australian success and, soon after their launch, their medicinal items were sold at all chemists.[41] The Winjennia Remedies Proprietary Company's extensive advertising openly acknowledged the Aboriginal pharmacopoeia, and Mount Wingen as it was then known, as the origin of their products. Their advertisements heralded Winjennia products would cure a startingly long list of ailments – 44 in total – that included everyday problems such as nappy rash, insect bites, bruises, cuts, boils, carbuncles, eye complaints and burns and stretched to more exotic afflictions like Barcoo rot, Whitlows and fistulas.[42] The list evidences the wide range of ailments treated by Burning Mountain's multi-use Aboriginal lithotherapeutics. [See Figure 3 and Figure 4]

Rapid expansion saw Winjennia survive a brush with auditors in 1904.[43] Decades later, despite their early success, the company diversified into other products and faltered. The well-regarded products left the marketplace after the firm's collapse, with Herbert A. Halls' scooping up the therapeutic formulas and remaining stock at the subsequent fire sale.[44]

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[40] "The Winjennia Remedies' Exhibit. Todd And Dimant, Clarence Street, Agents." *The Sydney Mail and New South Wales Advertiser*. April 5, 1902, 842.
[41] "Freeman's Journal". *Freeman's Journal.* January 31, 1907, 19.
[42] "Winjennia Advertising". *Benalla Standard.* May 10, 1927, 4. http://nla.gov.au/nla.news-article255564604
[43] VPRS 12024/P1 unit 66, item 1380. "1380 Matter of Winjennia Proprietary Limited. Companies and miscellaneous applications files." *Supreme Court of Victoria*. 1904. Accessed from the Public Record Office, Victoria.
[44] M. Day. "One tube to cure all." *Home Magazine, Herald Sun/Sunday Herald Sun*. January 10, 2018, 18; Roger Carr. "Wanted – new interest for an old cure-all." *The Australian.* December 29, 1997. From: trove.nla.gov.au/work/62666900?q=sulfazone&c=article&versionId=75730865

Sometime in the 1940's, Herbert A. Halls purchased the remaining stock and rights to a time-honoured Aboriginal remedy being sold under the name *Winjennia*, following the Winjennia Remedies Proprietary Company's collapse. Halls worked in 'the rag trade' in 'the Lane' in Melbourne.[45] In this work, Halls had often come across a variety of discarded retail stock. Halls' grandson, Roger Carr recalls being allowed to rifle for treasure through piles of such cast-off items 'Grandpa' had purchased.[46] [See Figure 5, Figure 6]

Sometime in the late 1940s[47] or early 1950s[48], Beauvais 'Mandy' Halls decided to resurrect two of Winjennia's products, an ointment and the liquid extract, re-branding them 'Sulfazone'. [See Figure 5 and Figure 6] Faithful to the traditional Aboriginal formulation, the ore was levigated with nothing else added to it. Afterwards, the liquid extract was mixed with lanolin, olein and petroleum jelly to form the ointment in the same way the Wonnarua people had produced the ointment using animal fat.[49]

'Sulfazone', the commercialised multi-purpose traditional Aboriginal cure-all, was unequalled as a disinfectant and used to treat infections, surface wounds, deep wounds, sore throats, sunburn and a wide variety of other ailments. In the case of toothache, although it blackened the inside of the mouth, it would remove the decay from the tooth.

In the early 1950s, the products' brand name was changed to 'Sulfazone' and was registered with the Victorian medical authorities. 'Sulfazone' was sold and marketed by Herbert A.

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[45] Carr. "Wanted – new interest for an old cure-all."
[46] Carr. "Wanted – new interest for an old cure-all."
[47] NSW National Parks and Wildlife Service. *Burning Mountain Nature Reserve*.
[48] Carr. "Wanted – new interest for an old cure-all."
This possibly occurred after the death of Herbert Alfred Halls in 1945 (Victorian Death Cert. No. 5212/1945).
[49] Pers. comm. Mary Jackson, 2019; Carr. "Wanted – new interest for an old cure-all."

Halls' son, Beauvais Mandeville Halls, known as 'Mandy', until his death in 1964. The ore used to produce 'Sulfazone' was collected manually and often dug out using large sticks, as the stones were simply too hot to move by hand. In 1964, while in the process of extracting the ore from Burning Mountain in this way, Beauvais 'Mandy' Halls suffered a heart attack and passed away on the side of the mount whose medicinal products he had resurrected.[50] The family continued to use the products, which Carr stated never appeared to degrade, even after Mandy's business closed. Unfortunately, much of the family's remaining stockpile of this remarkable product was lost in the 1983 Ash Wednesday fires that ripped through Victoria.[51]

Roger Carr remembered the old remedy as having added a stinging bite to his childhood when it was applied to all manner of ailments. Carr described the liquid tincture as being the shade of a good billy tea and odourless, whereas the butterscotch-coloured ointment's scent was depicted as reminiscent of a woolshed on a summer afternoon.[52] Many significant medical advances have been sourced from natural remedies, which led Carr to hope this remedy might attract the attention of modern science. Carr suggested Aboriginal people take up the development of this medicinal compound and capitalise on the remedy.[53] Sadly, Carr passed away before the cultural knowledge pertaining to this remedy could be returned to its traditional owners, and before any research was undertaken into the colonisation and commercialisation of this medical knowledge.

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[50] Pers. comm. Mary Jackson, 2019.
[51] Carr. "Wanted – new interest for an old cure-all."
[52] This was likely because lanolin was used in the production of Sulfazone, making up part of the carrier emollient. Oleine and petroleum jelly were also used: Mrs Mary Jackson, in conversations with the author, November 2019.
[53] Carr. "Wanted – new interest for an old cure-all."

Both Beauvais 'Mandy' Halls and his nephew, Roger Carr, would be encouraged at the prospect of potential scientific investigation into Burning Mountain's curative ore. Mandy put the products forward for testing as a cure for cancer, only to be bitterly disappointed at his request's rejection. Exciting new medicinal research exploring thermal vents for new pharmaceutical leads is being undertaken at the Center for Pharmaceutical Research and Innovation (CPRI) in the USA[54]. Soil microbes have previously led to the discovery of new and effective drugs. Whilst no analysis of Burning Mountain is currently underway, the researchers at the CPRI believe sites like Burning Mountain offer unique ecological environments which may be the source of new medical discoveries.[55]

In the thousands of years before colonisation, Aboriginal people were manufacturing, utilising and trading multi-application lithotherapeutics and their value and importance to Aboriginal people cannot be overstated. Projecting this knowledge into the deep past of Aboriginal people suggests a long history of use of the medicinal mineral resources of Burning Mountain, as perhaps the first ancient culture to have utilised both sulphur and alum pharmaceuticals.

Colonisation delivered devastating disease, dispossession, and the destruction of Aboriginal social, economic, political and religious structures. This included preventing the Wonnarua people from passing on Indigenous epistemology - their ways of being, knowing and doing

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[54] College of Pharmacy, at the University of Kentucky, USA.

[55] K. A. Shaaban, X. Wang, S. I. Elshahawi, L. V. Ponomareva, M. Sunkara, G. C. Copley, J. C. Hower, A. J. Morris., M. K. Kharel, J. S. Thorson. "Herbimycins D-F, ansamycin analogues from Streptomyces sp. RM-7-15". *Journal of Natural Products*. 76: 9 (September 27, 2013): 1619–1626; K. A. Shaaban, S. Singh, S. I. Elshahawi, X. Wang, L. V. Ponomareva, M. Sunkara, G. C. Copley J. C. Hower, A. J. Morris, M. K. Kharel, J. S. Thorson. "Venturicidin C, a new 20-membered macrolide produced by Streptomyces sp. TS-2-2". *The Journal of Antibiotics.* 67: 3 (March, 2014): 223-30; see also X Wang, Elshahawi SI, Shaaban KA, et al. "Ruthmycin, a new tetracyclic polyketide from Streptomyces sp. RM-4-15." *Organic Letters*. 16: 2 (2014): 456-459. doi:10.1021/ol4033418

on Country - and therefore hindering their ability to protect and care for the sacred site of Burning Mountain.

This study decolonises the Aboriginal scientific knowledge pertaining to Burning Mountain's mineral ore commodified by the colonisers and gives voice to important aspects of Aboriginal identity and culture. Whilst early colonists seldom acknowledged Aboriginal wisdom as the source of their 'bush' remedies,[56] many of the medicaments sold over the years using Burning Mountain's ore acknowledged the Aboriginal pharmacopoeia as the source of their medical formulas.

Colonisation delivered devastating disease; the destruction of Aboriginal social, economic, political and religious structures; and ultimately, dispossession. Dispossession involved the dual distresses of displacement and the subsequent degradation of the land. Denying Aboriginal people access to the sacred healing site of Burning Mountain prevented them from obtaining the mount's valuable mineral ore and from passing on valuable traditional knowledge regarding its use. Naturally, this severely impacted Aboriginal people's ability to trade in these mineral medicines and, consequently, impacted the health of the Aboriginal people in need of them.

[56] P. Clarke, "Aboriginal healing practices and Australian bush medicine." *Journal of the Anthropological Society of South Australia,* 33 (2008): 3-38. This is certainly evident from those first to capitalise on Burning Mountain's medicinal cures. Messrs. Muston and Co. and Quirindi chemist, Charles Allen did not publicise the Indigenous origin of their medicines, although the names of each ("Wingen" and "Black Wingen Oils" respectively) denote the physical location of the source of these medicines.

Aboriginal people's impartation of traditional medicinal lore to the colonisers who had usurped this sacred site of healing was a generous, life-giving gift and should be counted as one of the first major acts of reconciliation by Aboriginal Australians. [57]

[57] See: "Volcanos. Australia's Only Burning Mountain. Mount Wingen and the Mine of Wealth." *Evening News*, June 12, 1886, 11; "Winjennia: The Story of Australia's Burning Mountain", Melbourne: Queen City Printers Pty, 1920; Carr. "Wanted – new interest for an old cure-all."; "Valley of the Rivers. Anne Butler and William McClymont" E-Newsletter compiled by Toni Schaper. *Taree Family History Inc.* Ed.2. (February 2012); "Early Days on Upper Richmond." *The Wingham Chronicle and Manning River Observer,* October 9, 1931, 7; "Bush Parade." *Sydney Mail.* December 28, 1938, 16.

Chapter 4

Worimi Sacred Healing Site - Bulahdelah Mountain

"The land is my mother. Like a human mother, the land gives us protection,

enjoyment, and provides our needs – economic, social and religious.

We have a human relationship with the land:

Mother, daughter, son. When the land is taken from us or destroyed,

We feel hurt because we belong to the land and we are part of it."

Djinyini Gondarra

This chapter focuses on the world's largest above ground source alunitic rock, or alunite,[1] located on Worimi Country. Bulahdelah Mountain was a sacred healing site and the location of the Worimi *karadji's* workshop where they manufactured alum crystals, resembling clear quartz in appearance, which were traded with other Aboriginal nations. The Worimi trade in these medicinal crystals continued until the mid 1870s when the coloniser's mining

[1] Hydrated aluminium potassium sulphate, see Umwelt (Australia) Pty Ltd. Bulahdelah Mountain: Aboriginal Place Nomination Assessment. A report prepared for NSW National Park and Wildlife Service. Ref: 1747/R01/V1. Incl. information gleaned from interviews with Aboriginal Elders regarding Bulahdelah Mountain circa April-June 2003. (2003, June) 2.2.

endeavours limited access to the mount and blasts permanently destroyed the Worimi workshop located at the summit of this sacred mountain.

Bulahdelah Mountain (Alum Mountain)

Located 70 kilometres northeast of Newcastle, New South Wales, and to the east of the Bulahdelah township, Bulahdelah Mountain is historically significant to both Aboriginal and non-Indigenous and has a high level of archaeological significance. Bulahdelah township sits on the confluence of both the Myall and Crawford Rivers within the Greater Hunter Region of New South Wales' Mid-North Coast.

Bulahdelah Mountain, previously known as Alum Mountain and known locally as Alum Mountain, was a traditional meeting place of the Worimi people. In 2012, the mountain was named as an Aboriginal Place by the NSW Government, retaining its geographical name, Bulahdelah Mountain. Bulahdelah has been spelt in various ways, including Booladilla, Boolah Dillah, Booladeela, Bulladella, Bullahdelah, Booladeela, Bullah Delah, Bulladilla, Bullah Dellah.[2]

The literature reviewed for this study offers differing definitions of the name Bulahdelah, however sources agree the name is of Aboriginal origin.[3] Bulahdelah has long been thought to mean 'meeting of the waters', 'place where two rivers meet' or 'great rock'. Ascribing the

[2] Umwelt, Bulahdelah Mountain, 2.2.
[3] Bulahdelah and District Historical Society. A Glimpse into the History of Bulahdelah Mountain: a collection of previously printed newspaper and documented reports. Compiled by Malcolm Carrall. 1999; Great Lakes Council. Great Lakes Council Heritage Study. A community based study prepared by Great Lakes Council in partnership with the NSW Heritage Office. 2007; Umwelt. Bulahdelah Mountain 2.2; "Young Australia." *The Voice of the North.* September 10, 1930, 18. Retrieved December 16, 2019, from http://nla.gov.au/nla.news-article112242937. R. Evans and B. England. "Alum Mountain Bulahdelah. Geo-Log 2015." *Journal of the Amateur Geological Society of the Hunter Valley, Inc.* (September 19, 2015). Retrieved from: http://agshv.com/pdffiles/Geo-Logs/2015.pdf on Monday 16 December, 2019.

meaning 'two waters' to Bulahdelah would encapsulate the two important sacred water catchments the mount held, being the healing stream and the sacred waterhole. However, a reliable source ascribes *bulahdelah* as the Aboriginal expression for 'nothing like it' (ie, unique)[4]. This shows a thorough and communicated Aboriginal knowledge of the environment, along with an understanding of Bulahdelah's unique resource being the largest above ground source of alunitic rock in the world, alunite containing potassium and sulphate of alumina.[5] There is indeed 'nothing like it': as the state's only known source of (potash) mineral potassium and the only known alunite deposit in NSW, the mountain's deposits are the largest in the Southern Hemisphere.[6]

Crown Surveyor Lt John Oxley first recorded the mountain as 'Bulladella Mountain' in 1818. A few years later in 1825, the Australian Agricultural Company obtained a large land grant that included Bulahdelah Mountain. In 1830, the area was surveyed by Sir Edward Perry who noted a 'hill' at the crossing of the Myall and Crawford Rivers that was named 'Boola-deela' by the local Aboriginals. It was around this time the coastal part of this Australian Agricultural Company's land grant was surrendered because they failed to make it profitable.[7]

The small village of Bulahdelah was officially named in 1877 after timber grants given to the district between 1833 and 1853, combined with Myall River Settlement land grants supplied in 1840 saw the settlement grow into a village centred around the timber logging industry, until mining became the village's main economic source in 1878.[8] Claimed as vacant Crown

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[4] "Young Australia." *The Voice of the North.* September 10, 1930, 18. Retrieved December 16, 2019, from http://nla.gov.au/nla.news-article112242937.
[5] Umwelt. Bulahdelah Mountain 2.2.
[6] Umwelt. Bulahdelah Mountain, 2.2 (1747/R01/V1).
[7] Umwelt. Bulahdelah Mountain 2.3.
[8] Ted Baker. "Alum Mountain, Bulahdelah, N.S.W." *Bulahdelah District Historical Society*. (1985).

Land until 1897, the area then became a Crown Land Reserve and was managed by the Department of Mines. At the request of the Forestry Commission and the National Parks and Wildlife Service, Bulahdelah Mountain became part of the Bulahdelah State Forest in 1979.[9]

Alum in History

In this section we will look at the historical use of alum by ancient cultures. The chemical compound alum (a salt of aluminium) was processed at Bulahdelah from alunite ore. Potash alum is easily obtained from alunite by roasting, followed by lixiviation (the process of obtaining a soluble constituent from a solid) and crystallisation (a purification technique to create a pure solid crystal).[10] The literature covering alum's history shows it holds a unique place in ancient chemistry, due to it being available in more or less a pure state.[11] The earliest known reference to the use of alum is in Egyptian accounts of approximately 2000 B.C, although they do not mention alum specifically.[12] The medicinal use of alum is among the earliest documented cures found in Egyptian medical treatises, as well as Babylonian and Assyrian texts.[13] Alum was useful both in ancient chemistry and utilised by the technologically advanced societies of ancient Egypt, Mesopotamia, Middle Assyria and Sumeria, where it was known as *powder of the stone of the mountain*.[14] The Mesopotamian

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[9] See Great Lakes Council. Great Lakes Council Heritage Study; Umwelt. Bulahdelah Mountain 2.3; Navin Officer Heritage Consultants. Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study: Indigenous Cultural Heritage Component. Sydney: PPK Environment and Infrastructure Pty Ltd for the NSW Roads and Traffic Authority, 2000.
[10] M. Levey. "Alum in Ancient Mesopotamian Technology." *Isis* 49: 2 (June 1958): 166-169. Retrieved from: www.jstor.org/stable/226929 last accessed: 6 May 2019.
[11] Levey. "Alum in Ancient Mesopotamian Technology.": 166-169.
[12] J. N. Balston. *The Whatmans and Wove Paper: its invention and development in the west: research into the origins of wove paper and of genuine loom-woven wire-cloth*. West Farleigh: J. N. Balston, 1998, retrieved on 26 December, 2019 from http://www.wovepaper.co.uk/alumessay2.html
[13] G. E. Trease. *Pharmacy in History*. London: Balliere, Tindall and Cox, 1964; E. Photos-Jones list all authors first time referenced in a chapter. "Testing Greco-Roman Minerals: The case of solftaric alum*". Journal of Archaeological Science*: Reports 10 (2016): 82-95.
[14] E. Photos-Jones. "From mine to apothecary: an archaeo-biomedical approach to the study of the Greco-Roman lithotherapeutics industry." *World Archaeology*, 50: 3 (2018): 418-433. doi: 10.1080/00438243.2018.1515034; Levey. "Alum in Ancient Mesopotamian Technology," 166-169.

use of alum is widely cited in ancient literature, being of importance 'in dyeing, tanning, pharmaceutical, and other technological operations'.[15]Alum was as an important item of trade during the Mycenaean period and was traded by Egypt to other Middle Eastern countries[16].

Around 100AD the Romans recorded the use of alum, which was produced by dissolving potassium alum in water, to treat internal inflammations. In the 8th century, Mesopotamia created alum crystals that they called *Alumen de Rocca* (alum rocks). Alum was used in the ancient society of Mesopotamia medicinally and in glass making, the tanning of hides, in dyeing and washing. Later, in 1248AD an alum crystal factory was set up in Naples, Italy to create a high-grade therapeutic alum crystal.[17]

Alum is a unique element in the history of chemistry as it is one of the few known compounds that was obtainable by the ancients in a more or less pure state. When alum is pure it is white. Alum occupies an important position in history as being useful in ancient chemistry in technologically advanced societies, such as Mesopotamia and Egypt.[18]

Potash alum is easily obtained from alunite or alum stones by roasting them and exposing them to air, followed by lixiviation and crystallisation. This process is how the *karadji* of Bulahdelah would manufacture their medicinal alum crystals and how they would put, as Aunty Colleen Perry described it, the magic in the stones.[19]

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[15] Levey. "Alum in Ancient Mesopotamian Technology," 169.
[16] Balston. *The Whatmans and Wove Paper.*
[17] Health Benefit Times, "Health Benefits of Alum", Accessed 16 December 2022. https://www.healthbenefitstimes.com/health-benefits-of-alum/
[18] Levey. "Alum in Ancient Mesopotamian Technology," 169.
[19] Umwelt, Bulahdelah Mountain, 4.9.

Ancient Medicinal Manufacture of Alum

As we look at the early manufacture of alum, evidence shows ancient medicinal workshops were generally in the place of origin, that is, where the mineral was sourced.[20] Alunite needs to be treated to obtain alum.[21] The excess alumina was separated from the alunite by a process of

> roasting and lixiviating the ore. Roasting often made the alum rock porous, facilitating the extraction of the alum, which could then be further purified by boiling and recrystallization[22].

Historically, the ancient treatment of the minerals that included the process of grading, separating, roasting, grinding, washing, heating and evaporating would take place where the mineral was sourced or extracted.[23]

We cannot visit the original waterhole used by the Worimi *karadji* atop of Bulahdelah Mountain due to the complete destruction of this sacred waterhole by mining. To understand the manufacture of medicines and the industry that was born there, we can look to another ancient culture who relied on alum medicinally. The closest ancient industry to resemble the workshop used by the Worimi *karadji* would be found by looking to ancient Greece and to the island of Lemnos. Lemnos was the birthplace of an ancient medicine called *Leminian Earth*. This medicine was created in ancient Greece that treated many ailments – the first reference to its healing properties appearing around the time of the Trojan War (circa 1260 BC). Created on the Greek isle of Lemnos, the ingredients were secret and the priests would

[20] Photos-Jones. "From mine to apothecary," 418-433.
[21] J. H. M. Abbott. "J. H. M. A.", *Bulletin*. 45: 2335. (November 13, 1924): 19.
[22] Balston. *The Whatmans and Wove Paper.*
[23] Photos-Jones. "From mine to apothecary," 418-433.

say it was because the earth it was made from was sacred.[24] Modern analysis[25] has surmised that it was alum which was the active ingredient that ensured its efficacy.

The ancient Greeks deliberately redirected the waters of a spring over the pit where they were extracting the *Leminian Earth*. The alum-bearing waters of this spring, coming from the rich, volcanic alum bearing rock, was run over naturally occurring volcanic clay. The clay absorbed the alum out of the water, enriching it. This clay was then dried out in the shape of a pill to become the medicine known as *Leminian Earth,* in a similar fashion to the clay pills manufactured and prescribed by the *karadji* as described in chapter two.[26] The study concluded that *Leminian Earth* was likely made up of 40 per cent montmorillonite, 35 per cent kaolin clay (a major component in healing clays), 20 per cent alum, 5 per cent hematite. It should be noted that all of these volcanic elements are not only available, but prevalent on Bulahdelah Mountain and the surrounds.[27]

The Indigenous Cultural Heritage component of the Navin Officer Heritage Consultants report released in 2000 (the Navin Report) noted:[28]

> The survey traverses conducted on the western slopes of the Mountain failed to uncover definitive evidence of Aboriginal procurement, however the task is frustrated

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[24] A. J. Hall and E. Photos-Jones. "Accessing Past Beliefs And Practices: The Case Of Lemnian Earth". *Archaoeometry* 50: 6. (2008): 1034-1049. doi: 10.1111/j.1475-4754.2007.00377.x
[25] Hall and Photos-Jones. "Accessing Past Beliefs And Practices: The Case Of Lemnian Earth", 1034-1049.
[26] See W. E. Roth, *Ethnological Studies among the North-West-Central Queensland Aborigines,* Brisbane: Government Printer, 1897, 163 in M. J. Rowland. "Geophagy: an assessment of implications for the development of Australian Indigenous plant processing technologies". *Australian Aboriginal Studies* 1 (2002): 55. "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods". *The Land.* April 23, 1937, 16. Retrieved December 11, 2019, from http://nla.gov.au/nla.news-article104148007; "Strange Ways of the Aborigines: Native Chemistry." *Sydney Mail.* March 4, 1936, 46. "Outdoor Australia." *Sydney Mail*. July 28, 1926, 22.
[27] R. B. Jenkins and J. E. Nethery. "The development of Early Permian sequences and hydrothermal alteration in the Myall Syncline, central eastern New South Wales *Australian Journal of Earth Sciences* 39. (1992): 223-237, doi: 10.1080/08120099208728016
[28] Navin Officer Heritage Consultants. Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study, 25.

> by ground disturbance and the presence of rhyolite gravels from European mining and quarrying since the 1870s. Despite the failure to uncover evidence of Aboriginal procurement during the present survey, it is considered likely that Aboriginal quarries were once present, and may still survive, on the mountain range.

The potential discovery of Aboriginal quarry sites on Bulahdelah Mountain make archaeological exploration the important next step in maintaining the cultural heritage of this sacred place.[29] Identified Aboriginal quarry sites date back at least 2,100 years, with the evidence showing that generations of Aboriginal people managed industrial-sized quarry-sites, including the largest historical quarry site in the Southern Hemisphere, which places the trade systems of Aboriginal people on a world scale.[30] Although European mining blasts may have destroyed archaeological evidence, an archaeological survey of the entire mount is a much needed investigation.

An archaeological survey of Bulahdelah Mountain undertaken by Navin Officer Heritage Consultants determined the majority of the Aboriginal sites (namely artefact scatters, scarred

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[29] Archaeological investigations have been undertaken around the Bulahdelah district, see M. Barber, *Archaeological Survey for a Proposed Hard Rock Quarry, Bulahdelah, NSW.* A Report to Weldoy Pty Ltd, 1992; D. Byrne, *The Aboriginal and Archaeological Significance of the New South Wales Rainforests*. A Report to the Forestry Commission and the Australian Heritage Commission, 1987; N. Curran, *Archaeological Survey of a Proposed Haul Route for a Hard Rock Quarry, Bulahdelah, N. S. W.* A report by Resource Planning Pty Ltd to Weldoy Pty Ltd, 1993; S. Davies, *An Archaeological Assessment of the Proposed Telecom Fibre Optic Cable Route between Squires Hill Road and Tritton Regenerator Stations, Central Coast, New South Wales.* A Report Telecom Australia. 1991; A. Ford, *Karuah to Bulahdelah Pacific Highway Upgrading. Archaeological Test Excavations Report.* A report to NSW RTA, 1999; L. Haglund, *Pacific Highway (State Highway No.10): Bulahdelah to Coolongolook Deviation: Archaeological Survey 2 and test excavations).* A report to NSW RTA, 1992, L. Haglund, *Pacific Highway (State Highway No.10): Bulahdelah to Coolongolook Deviation: Salvage of Aboriginal archaeological sites*. A report to NSW RTA, 1998; M. Koettig, *Archaeological Survey for Aboriginal Sites in the Location of the Proposed Water Treatment Site at Bulahdelah, New South Wales*. A report to NSW Public Works Department. 1986; Navin Officer Heritage Consultants, *Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study. Indigenous Cultural Heritage Component.* A report to PPK Environmental and Infrastructure on behalf of the RTA. 2000; and E. Rich, Proposed New Road Bulahdelah to Coolongolook. Archaeological Survey for Aboriginal Sites. A report to Envirosciences Pty Limited, (1990) and out of this list of surveys only two were undertaken in the Bulahdelah Range area.

[30] See Carli Willis. "'Australia's Silk Road': Quarry sites dating back 2,100 years reveal world-scale trading system on Mithaka country." *ABC Western Queensland*, 4 April 2022, https://www.abc.net.au/news/2022-04-04/-mithaka-cultural-landscape-silk-road/100959802.

trees, a hollowed-out tree and a guardian tree), were situated on the lower to ground levels, with a rock-shelter located near the summit of the mountain.[31] Bulahdelah Mountain's upper western slopes were not included in this study area, but the Bulahdelah Mountain area is deemed to have a high potential of containing such sites, notwithstanding the destruction caused by mining.[32]

Local Aboriginal people hold direct and/or passed-on knowledge of Bulahdelah Mountain and the surrounding area. For the Indigenous Cultural Heritage Component of the Navin report titled, 'Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study' the Navin Officer Heritage Consultants conducted an archaeological survey approximately 3.5 kilometres wide at the widest point and 7 kilometres long from north to south in the area around the upgrade to the Pacific Highway at Bulahdelah. Summarising the Navin Report's outline of research conclusions in their report titled 'Investigations into reported Aboriginal Graves at the base of Bulahdelah Mountain (Alum Mountain), NSW' the Navin Officer Heritage Consultants stated:

> the Elders have always known that Bulahdelah Mountain was a special place. Traditional burials had been made at the base of the Mountain on platforms about 4-5 feet off the ground, indicating that the deceased were 'clever people, *Kadija* or *Wirrigan*' and that the mountain was a sacred place. The top of the mountain had traditional Aboriginal significance related to men's business. A stream running from the mountain had healing powers and a type of stone collected on the Mountain was made into medicine.[33]

[31] Navin Officer Heritage Consultants. Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study.
[32] See Great Lakes Council. Great Lakes Council Heritage Study.
[33] Great Lakes Council. Great Lakes Council Heritage Study, Annex A, Bulahdelah Mountain, 3.2, 8.

Alum was a significant and important resource for Aboriginal people.[34] Alum, although not of botanical origin, certainly fills the perceived gaps in the Aboriginal pharmacopeia as understood by C.S.I.R.O scientist, Dr Webb, in the areas of emetics, antiseptics and blood coagulants.[35] Multi-purpose medicinal alum which, when crystallised is easily ground down to become alum powder, would have been extremely valuable to, and guarded so closely by, Aboriginal Elders and *karadji*. In his 1861 report, William Thomas, who was given charge of the Melbourne and Westernport Aborigines, listed the illnesses Aboriginal people were subject to prior to colonisation as: dysentery, boils, skin eruptions, colds, burns and wounds. Anthropologist Brough Smyth listed ophthalmia, eczematous skin infections and colds, while Rev. D. Mackillop wrote in 1893 that the Daly River tribes were likely to die by either old age, consumption or murder.[36] Given this information, alum's ability to treat such a wide range of ailments and ills must have certainly seemed nothing short of miraculous.[37]

Alum was used historically as a 'cure-all' having an astounding variety of medicinal and practical applications. Alum has been used medicinally, in either crystallised form or as powder as an astringent to shrink tissues and minimise the release of body fluids; as a styptic to stop or decrease haemorrhage or bleeding, as an emetic agent, in the aid of muscle cramps, to treat eye abscesses; to relieve bladder infections and bladder stones; to treat dysentery and to clear acne. It has also been utilised as a toothpaste, tooth powder and mouthwash; to heal cracked heels, as a deodorant, to remove unwanted hair, to treat lice, to treat facial pigmentation, to ease dental pain, to treat jaundice, itchy skin, dark circles and cold sores and to prevent premature aging by treating wrinkles. Powdered alum has been used in the

[34] Umwelt. Bulahdelah Mountain, 4.9; NSW National Parks and Wildlife Service. Burning Mountain Nature Reserve: plan of management. NSW National Parks and Wildlife Service and Stewart McMahon, Hurstville: The Service, 1993.
[35] A. Cribb and J. Cribb. *Wild Medicine in Australia*. Sydney: Fontana/Collins, 1984, 11, 17, 208-209.
[36] Cribb and Cribb. *Wild Medicine in Australia*, 16.
[37] Cribb and Cribb. *Wild Medicine in Australia*, 16.

treatment of canker sores; and is effective in dealing with Athlete's foot (tinea). Combined with honey, alum is used for sore throats, asthma and coughs. Importantly, alum is used to filter impurities out of water and make it clean.[38]

Alum was the earliest chemical industry.[39] With the first human occupation of this continent conservatively estimated to have occurred over 60,000 years ago[40], the Aboriginal use and trade of alum in all probability pre-dates alum's use and trade by any other ancient society on earth. The high importance and value of medicinal alum to Aboriginal people cannot be overstated. Access to such an efficacious multi-use medicine certainly contributed to the good health Aboriginal people enjoyed prior to invasion. Aboriginal people are the world's oldest surviving continuing culture and were this land's, if not the world's, first chemists and in all probability the first ancient society to trade in alum.

The Worimi People

Bulahdelah Mountain sits on Worimi Country on New South Wales' Barrington Coast and is an Aboriginal Place. Bulahdelah Mountain holds significant cultural, spiritual and historical importance to Worimi people. Worimi Country is bordered to the north by the Biripai, to the northwest by the Dungutti, to the south by the Awabakal and to the west by the Gringai and Wonnarua peoples. The Worimi were divided into *nurras*, or groups. There were ten *nurras* in total with eight of these *nurras* centralised around the Great Lakes area. Each group

[38] Health Benefits Times, "19 Top Health Benefits of Alum". Retrieved 16 December 2019, from https://www.healthbenefitstimes.com/health-benefits-of-alum/
[39] C. J. Singer. *The Earliest Chemical Industry*. London: Folio Society, 1948.
[40] Billy Griffiths, *Deep Time Dreaming: Uncovering Ancient Australia*. Carlton, Victoria, Black Inc. 2018, 38.

occupied a defined locality within Worimi territory, however the effects of colonisation obscured these boundaries before they could be properly recorded.[41]

The lifestyle of the Worimi people prior to invasion was typical of people located along the coastline of eastern Australia. A rich food supply that supported a high population was sourced from coastal lakes, estuaries and beaches in addition to the wooded country. John Joseph William Molesworth Oxley (1784-1828), surveyor-general and explorer, noted after visiting the area in the early 1800s:

> The natives are extremely numerous along this part of the coast; these extensive lakes, which abound with fish, being extremely favourable to their easy subsistence; large troops of them appear at the beaches while their canoes on the lakes area equally numerous. In the mornings their fires are to be observed in every direction; they evidently appear to shun us, and we wish for no further acquaintance.[42]

The Worimi people, like the Biripai and Gringai, spoke the Gathang language. William Scott was born in Carrington, Port Stephens in 1844 and his recollections of growing up amongst the Port Stephens Aboriginal people can inform us of what life was like for the Worimi and Gringai people at this point in time. [43] The Worimi people were a contented and positive community, known to be always up for a laugh. Possessing a fantastic sense of humour and playful nature, the Worimi were great mimics. Scott stated:

> Among themselves there were seldom any disputes or quarrels. They seemed always to regard life as a huge joke to be enjoyed to the utmost. With their children they were

[41] Great Lakes Council. Great Lakes Council Heritage Study, 19.
[42] Great Lakes Council. Great Lakes Council Heritage Study, 19.
[43] Carrington had been named after Lord Carrington, although previously the A.A. Company had referred to the place by its Aboriginal name, *Carabean*: John Ramsland, *The Rainbow Beach Man: The life and times of Les Ridgeway Worimi Elder,* Melbourne: Brolga Publishing, 2009, 25.

> patient, affectionate and marvellously forbearing. Never once in all my life at Carrington did I ever see a picaninny slapped or chastised, and the younger fry could be mischievous and very trying on occasions… They were fond, too, of pets, for the place was always alive with parrots, bears, opossums, squirrels, kangaroo rats and bandicoots that had been caught in the bush and tamed to the domesticity of camp life. With these birds and animals usually well trained, they would amuse themselves for hours, indulging in fits of mirth at the antics and feats of their pets.
>
> A people that could treat their children and their pets in this fashion could have little guile or evil in their hearts. And so I always found it.[44]

The Worimi enjoyed good health. According to the historian John Ramsland:

> Before the white invasion, sickness from disease troubled the Worimi little and within the normal cycle of natural life. Nature and a healthy diet safe-guarded them. So they were not prepared for the shock of the diseases or the violent acts that the white man brought into their territory. The introduction of measles was a terrible time for the people. The disease spread with disturbing rapidity and 'wrought great havoc, the mortality being exceedingly heavy'. So were the occasional acts of slaughter, especially when deadly poisons were used. After the intrusion of Europeans into the Port Stephens area, some Worimi were caught up in the 'chains of infection', the 'silent invaders', not only measles but also tuberculosis, maybe smallpox, and venereal diseases, as Judy Campbell comprehensively describes in her study.[45] Of

[44] Gordon Bennett, ed., *The Port Stephens Blacks: Recollections of William Scott*, Dungog: Chronicle Office, 1929 ,13.
[45] Judy Campbell, *Invisible Invaders, smallpox and other diseases in Aboriginal Australia 1780-1880,* Melbourne: Melbourne University Press, 2002; see also review of the same by R. G. Kimber in *Aboriginal History* 27, (2003): 249-52.

> these potential killers, tuberculosis (commonly known as TB or consumption) was by far the worst of the 'virgin epidemic catastrophes'.[46]

Scott and his family were welcomed by the local Aboriginal people, with Scott's father having been made an honorary blood-brother.[47] Yet, as close as the Scott family were to the local people, certain information was withheld from them. An example of this would be the 'mystery bags' carried by the initiated Worimi men. Scott made inquiries as to their contents, yet the men refused to provide Scott with answers to his questions as the 'mystery bags', and their contents, were not up for discussion. Scott recalls:

> These bags were attached to the waist-belt when the men were in ceremonial undress, some of them being attractively made. My curiosity as to their contents was gratified on one occasion in an unexpected manner, while I was still quite young. We children were out for a walk with our faithful servant Fanny when I, noticing a big mangrove tree on the edge of the bay, climbed to its top-most branches. In a hollow fork I discovered one of these mystery bags and displayed my prize excitedly to the group on the ground. Fanny, on seeing it, became greatly agitated and ordered me to restore it to its hiding place at once. Before doing so, however, I peered into it and saw only a piece of rock crystal. Fanny implored us to maintain silence about the find, her perturbation being so intense and impressing us so strongly, that we never mentioned the matter afterwards.[48]

This piece of rock crystal so revered by Fanny was certainly a sacred object of immense value. Having the appearance of clear quartz, the solemnity and respect with which Fanny regarded it makes it probable this was an alum crystal and not clear quartz.

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[46] Ramsland, *The Rainbow Beach Man*, 7.
[47] Bennett, *The Port Stephens Blacks*, 8-9.
[48] Bennett, *The Port Stephens Blacks*, 8-9.

> The piece was a sacred object – a *churinga* (tjurunga)[49] – probably a small piece of quartz (taking into account Scott's description), a secret symbol of the Dreamtime or eternal dream, which was never to be lost (hence Fanny's anxiety). As a secret symbol, it took on the nature of the culture-hero who gives life and strength to its bearer. It was always handled with reverence and allowed the male initiate to pass into the secret world. The stone was of vital importance to the sacred and secular life of the Worimi. Such stones were associated with the increase of the species and in the secular world they were used in the success of the hunt, the game from which could only be eaten by initiates. In successful forms of love-making or in the cementing and renewal of friendships, it provided symbolic support. They were intended as spiritual aids to prevent fighting and quarrelling. The *churinga*, then, was a highly useful symbol of retaining and imparting ideals of both social and spiritual value. It expressed the interdependence of Aboriginal philosophy, economics, art and religion. The hunting and food-gathering culture of the Worimi can only be understood fully through this notion of mutual interdependence.[50]

Sacred stones

Sacred stones (*murruba gibbers* or *murramai gibbers* in Gathang, called *tjirkun* by Elkin, *churinga, tjurunga* or *atywerrenge* in Arrernte) have captured and held the attention of European observers since the invasion and, more recently, sacred stones have been caught up within land rights politics. Sacred stones such as the *Murruba Gibbers* of the Worimi were made from Country, linked the bearer both to Country and cultural lore, were inherited and,

[49] Ramsland has not used a Gathang word here, but rather a word used by Aboriginal people of Central Australian Arrernte groups. According to A.P. Elkin 'tjirkun' is the word for 'sacred object', see A. P. Elkin, *Aboriginal Men of High Degree: Initiation and Sorcery in the World's Oldest Tradition.* Rochester: Inner Traditions International, 1994, 82-83.
[50] Ramsland, *The Rainbow Beach Man*, 13.

likewise, passed down through generational lines. These sacred stones were obtained by an initiate at a young man's initiation ceremony and were carried on his person always, personally protected, revered, and kept hidden from the view of the uninitiated. These stones were made from Country, were obtained on Country in ceremony held on Country. The stones and the land were linked by cultural lore and ceremony, so it should not be surprising these stones eventually became part of the land rights political landscape.

An example of how sacred objects have been enmeshed into land rights politics is the sizeable collection of sacred objects that was amassed over many decades by anthropologist Theodore (Ted) George Henry Strehlow. Ted Strehlow grew up on the Hermannsburg mission, west of Alice Springs, and was the son of the Reverend charged with running the mission between 1894 and 1922. Strehlow was uniquely situated by birth, and in place and time, to have access to cultural ceremonies and items that were beyond the reach of other non-Indigenous men at the time. The custodians of this large collection of sacred objects were said to be extremely fearful of the desecration of their sacred objects and this led to their entrusting their safe-keeping to Strehlow.

> However, this act of trust by Aboriginal people was to lead to one of the most bitter controversies in the world involving sacred objects and their repatriation to their rightful owners.
>
> Central Land Council employees spend a lot of time working with Aboriginal people out bush. This often involves visits to sacred sites, some of which are traditional storehouses for men's secret-sacred objects – objects known throughout Australia by the Arrernte word *atywerrenge* (sometimes spelt '*churinga*' or '*tjurunga*').

> The caves and other places which have houses *atywrrenge* since time immemorial are often, though not always, empty. When asked about the whereabouts of the missing objects Aboriginal people chant a familiar refrain – 'I think Stehlow been take em'.[51]

Strehlow's collection was estimated to have around 700 objects, mostly secret-sacred in nature. Aside from sacred stones, the collection included an approximate '15 kilometres of movie film, 7,000 slides, thousands of pages of genealogical records, myths, sound recordings' and '42 diaries', as well as 'paintings, letters, maps' and 'a 1,000 volume library'[52]

Strehlow consistently maintained that he had been invited to gather his collection and entrusted with its care by Aboriginal Elders who believed his ethnographic endeavours were the way forward to ensure the preservation of their culture and knowledge. In the years following 'old men continued to instruct their young men when they could, but Strehlow always believed that any ceremonial knowledge that was not recorded by him was destined for oblivion.'[53]

Strehlow exerted his opposition to representative land councils stating this was due to his belief that there was no basis within Aboriginal tradition for them. Strehlow believed only those with legitimate claims to the *tjurunga* had legitimate claims to land, views which became more unpopular as the land rights movement solidified.[54] After his death, his second wife Kathy inherited the collection, which forced extreme action

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[51] John Morton. "The Strehlow Collection of Sacred Objects", https://www.clc.org.au/wp-content/uploads/2021/03/The-Strehlow-collection-of-sacred-objects.pdf
[52] Morton. "The Strehlow Collection of Sacred Objects"
[53] Morton. "The Strehlow Collection of Sacred Objects".
[54] "Flight of the sacred stones", *The Bulletin with Newsweek* 106: 5442 (November 13, 1984): 66, https://nla.gov.au:443/tarkine/nla.obj-1505665263

> with the passing of the Aboriginal and Torres Strait Islander Heritage (Interim Protection) Act 1984, which gave the Federal Government of Australia considerably increased powers in matters concerning the protection of Aboriginal heritage, particularly in relation to sacred sites and sacred objects. Just prior to the passing of the Act the collection was secretly moved from the Foundation and allegedly taken to New Zealand, although there were rumours of other possible overseas locations, and other rumours which suggested the collection never actually left Australian shores.[55]

Despite these media protestations that the removal of these secret-sacred objects was for their cultural preservation, in 1992 Carl Stehlow, Ted and Kathy Strehlow's son, allegedly attempted to sell at auction some 260 Aboriginal artefacts, including some secret-sacred items, in Adelaide for an asking price of $6.5 million. However the material was impounded under South Australian heritage legislation, along with other collection material kept at the University of Adelaide and other items housed at the Strehlow Research Foundation. Years afterwards the majority of the secret-sacred items offered for sale in Adelaide were bought by the Central Land Council to be repatriated under Aboriginal Law to their rightful owners.[56]

Most of the collection is now back in Central Australia. While the collection is now more accessible to both Aboriginal and non-Aboriginal people, however, the Strehlow Research Centre Act states that the Stehlow Research Centre should honour the memory of TGH Strehlow whilst promoting knowledge and understanding of Aboriginal culture.[57]

For Aboriginal people, sacred stones can represent our custodianship of Country and our cultural lore and protocols. Sacred stones represent an inheritance of the custodianship of

[55] Morton, "The Strehlow Collection of Sacred Objects".
[56] Morton, "The Strehlow Collection of Sacred Objects".
[57] Morton, "The Strehlow Collection of Sacred Objects".

Country, and if the chain of custody is interrupted it is often considered irreparable for fear of ill spiritual repercussions. Sacred stones and objects are integrated within the ceremonial life of Aboriginal people. Sacred healing stones were traditionally revered and protected by the *karadji* due to their immense value to the health of the community which the *karadji* served. The complicated history of non-Indigenous people having taken custodianship of, or having stolen, sacred stones is important to consider when we look to the way the *karadji* protected their sacred crystals so fervently. It is probable that cultural lore and protocols were strengthened post-invasion to further protect cultural knowledge and resources, particularly once Aboriginal people identified the colonists' interest in the abundant natural resources of this land, including minerals such as gold.

Sacred stones of the Worimi

In this section we consider the sacred stones of the Worimi *karadji* which evidence shows would have included, if not solely comprised of, crystallised alum. Worimi *karadji* would carry with them at all times three white sacred stones. These rock crystals are recorded in a 1911 article in *Anthropos* detailing observations of the Aboriginal people from the Raymond Terrace area, north of Newcastle:

> The medicine men also possessed and carried with them certain magical objects among which none were more reverenced than the quartz crystals; these were held to possess the most marvellous powers. These amulets were carried about in a skin pouch and were carefully kept from the eyes of the women and children. [58]

[58] B. McKiernan. "Some notes on the Aborigines of the Lower Hunter". *Anthropos* (1911): 889.

These crystals held an important significance to Aboriginal Elders and the *karadji*. Crystals were observed to be a necessary part of the *karadji*'s equipment[59].

Sacred white stones were recorded in the 1936 field notebook of the anthropologist Caroline Tennant Kelly, at Kempsey.

> In olden times a white stone was travelled from place to place, through the tribes – the tribe must be in a state of peace with itself to get this stone from the man travelling with it. Well, when they know the stone was coming – why they had to get all the people in the tribe to stop making row and the old fellers would fix all the law up – everyone worked the right way and all that then they would be ready for the stone. [60]

When taking custodianship of a stone as precious and life-giving as an alum crystal, the Elders would have first needed to first determine which ailments should receive priority treatment to avoid dissent within the community. Whatever the white stone that Kelly described was, or whatever the beliefs that surrounded this tradition, this stone was evidently considered such a valued sacred object that cultural custom demanded those in its possession to be firmly living by the lore before being allowed custodianship. A medicinal alum crystal, with the power to heal the majority of what ailed the community, would need to be managed firmly by the *karadji,* particularly if obtaining another alum crystal was made difficult by distance or other difficulty.

Sacred stones express the interdependence of Aboriginal economics, culture, religion, philosophy and health. Sacred stones were an integral part of the ceremonial life of the

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[59] Elkin. *Aboriginal Men of High Degree*, 85.
[60] Caroline Tennant Kelly, Kempsey 1936 Field Notebook (1936) UQFL489-Series E-File 20, Caroline Kelly Papers, Fryer Library, University of Queensland. Copy provided by Dr Ray Kelly Snr, from middle page 109-110.

Worimi. Sacred stones held power in ceremony, lore, tribal life and kinship systems. The Worimi *nurras* would traditionally be sent messages inviting them to take part in various tribal ceremonies, such as the *keeparra* ceremony of initiation. Messengers, an initiate, would carry the *goonanduckyer*, or message stick, along with pieces of colourless stone and some sacred tails. The *goonanduckyer* and other sacred items were not to be seen by women or any uninitiated person, under penalty of death.[61] These stones were sacred stones, as were those carried by the *karadji* which were also not to be sighted by an uninitiated person, under the penalty of death. This extreme penalty may have been the consequence of post-invasion fear of losing Country to the invaders should the colonisers identify the location of the mineral resource from which the crystallised stones were sourced.

As each *nurra* of the Worimi would receive their invitation, the *nurras* would begin to ready themselves for the march and begin the journey to the *keeparra* ceremonial grounds. As late as December 1896 and December 1897 initiation ceremonies, or *keeparra* ceremonies, were still being held in Forster despite the many ravages of colonisation which had already permanently altered much of the Worimi's traditional life. The *nurras* of the Worimi were noted by scientist, geologist and amateur anthropologist Walter John Enright to be:

> The Gummingingal, inhabiting the territory on the north shore of Port Stephens and the Karuah; the Waringal, living between Telegherry and Pipeclay Creeks; the Warrimee, living between Telegherry Creek, Port Stephens, the Myall River and the sea shore; the Yeerunggal, about the Myall Lakes; the Birrimbai, in the neighbourhood of Bungwall Flat; and the Birronggal, on the Myall River.[62]

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[61] Ramsland, *The Rainbow Beach Man*, 13; see also Walter John Enright, "The Blacks. The Initiation Ceremonies of the Aborigines of Port Stephens, NSW." *Wingham Chronicle,* September 24, 1926, 2.
[62] Walter John Enright, "The language, weapons and manufactures of the Aborigines of Port Stephens, NSW." *Journal of Royal Society of New South Wales* 34. (1900): 103-118.

Ramsland delineates the Worimi clans slightly differently, as follows:

> Before the invasion of white man, the country on the northern side of Port Stephens and Karuah, extending to the right bank of the Myall River, belonged to the clan of the Gummipingal (The People of the Spear); the land between Myall River, the Myall Lakes and the sea belonged to the Grewigerigal (The People of the Sea), and the district between Pipeclay and Telleghery Creek was occupied by the Doowalligal (The People Living Between The Two). As Kattang (Kutthung)[63] was the common language, there was no sign language or social sub-divisions between these clans.[64]

Gummipingal Country has considerable natural quartz, which is found in abundance at Gummi Gummi. The Gummipingal, or people of the spear[65], derives from 'gummi' which means 'spear' and 'gal' which means people. Gummi Gummi is believed to mean 'place of many crystal stones'. Natural quartz from Gummipingal Country the source of sharpened crystal spear tips which were highly sought after.[66]

Worimi and Biripai Elders remain the knowledge holders regarding the sacred stones from Bulahdelah Mountain and remember being told of the ceremonies that would be held there. Biripai Elder Aunty Colleen Perry, who has represented Karuah Local Aboriginal Land Council in archaeological investigations as a Sites Officer, informs that the top of Bulahdelah Mountain is a men's site. Aunty Colleen was born on Purfleet Mission at Taree and has resided in Karuah since 1939. Aunty Colleen was told the main Worimi Elders held magic

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[63] Or Gathang.
[64] Ramsland, *The Rainbow Beach Man*, 22.
[65] A. P. Elkin, "Notes on the social organisation of the Worimi, a Kattang-speaking people". *Oceania* 2: 3 (1932): 359–63. http://www.jstor.org/stable/27976153.
[66] Robert Syron and Luke Russell, "The Kabook and Watoo People of the Gringai Barrington River Gloucester New South Wales", 15 August 2018, https://hunterlivinghistories.com/2018/08/15/the-kabook-watoo/

white stones obtained from the mountain that were passed on to younger initiates. Aunty Colleen states,

> You know the old full blood tribal men – they would go up and they carried three white stones … they would put magic in them.[67]

Hector Saunders is a Biripai Elder from Karuah Local Aboriginal Land Council. Hector states, 'it's all significant on the top of the mountain, not on the bottom'. Hector related there are caves on the mountain and that he knew that ceremonies were formerly held on the eastern side of the mountain.[68] Aunty Colleen also confirmed that there were ceremonies held on the eastern side of the mountain. The Elders agreed the mountain has a very spiritual aura about it.[69] Archaeological investigations provided physical evidence to support oral histories recounting Aboriginal occupation of the mountain for both economic and ceremonial purposes.[70]

Christine Ping-Griffin, a member of Karuah Local Aboriginal Land Council acknowledges there is a sacred tree at the base of Bulahdelah Mountain called a Guardian Tree and that many Aboriginal people are buried on the mount's eastern side. The mountain has spiritual significance to Christine, who states

> I believe the mountain brought me to Bulahdelah. I came to Bulahdelah on an advisory committee meeting and I felt I had to stay… I carry a photo of the mountain with me everywhere I go.[71]

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[67] Umwelt. Bulahdelah Mountain, 4.9.
[68] Umwelt. Bulahdelah Mountain, 4.9.
[69] Umwelt. Bulahdelah Mountain, 4.9.
[70] Umwelt. Bulahdelah Mountain, 4.9.
[71] Umwelt. Bulahdelah Mountain, 4.12.

Uncle Barry Syron is a Biripai Elder and member of Karuah Local Aboriginal Land Council and Aboriginal Elder for Bulahdelah. Uncle Barry's mother grew up at Purfleet Mission and was a very highly respected Aboriginal Elder who held considerable cultural knowledge. Uncle Barry notes alum from the mountain would have been good for painting and that:

> There is alum on a midden at Hawks Nest at Dark Point. They had to come here (Bulahdelah) to get it, it's the only place around with alum.[72]

Susan Syron, sister of Barry Syron, moved to Bulahdelah when she was aged six (Susan was born in the late 1940s). Susan states

> I have heard from other Kooris that [the mountain] was a pointer to show the way. I have heard there is supposed to be clever men buried on the mountain. I heard something as a kid. We walked up the mountain with my auntie and my mother. I remember my mother saying to us something like 'come back here you kids there was blackfellas buried up there' as she pointed to the mountain.[73]

Steve Brereton, an Aboriginal National Parks and Wildlife Service employee who has spent many, many years with Aboriginal Elders gaining knowledge, learning traditional ways and coming to know our ancestral beliefs, provided information about Bulahdelah Mountain being a very sacred place. Brereton states,

> A number of burials were at the base of the mountain. These were on platforms about 4-5 feet off the ground and the bodies were wrapped in a sheet bark. The only people that were buried in this way are what we call clever people, Kadija or Wirrigen. These are the spiritual ones of the tribe. They are very respected, sometimes the people were

[72] Umwelt. Bulahdelah Mountain, 4.12.
[73] Umwelt. Bulahdelah Mountain, 4.12.

> scared of them because of their spiritual powers. Mostly these powers were used to heal sickness or injuries. To bury these clever people at the base of Alum Mountain indicates that the mountain must be a very sacred place.
>
> The mountain was also used for healing. Some kind of stone was collected off the mountain and made into a medicine. Also, a stream that runs off the mountain had healing powers. This information was passed on to me by Aboriginal Elders, as it was passed on to them by their Elders. This is how it has been done for hundreds of generations.[74]

Brereton also confirms the top of the mountain was a men's area.

> It's a men's area on the top of the mountain. The bottom of the mountain is not for men only. Stories have been told to me that remains of Aborigines were left in trees around the base of the mountain until decomposed to bones. Then they were carried up the mountain. This was only for the clever men.[75]

These important oral histories underscore the deep cultural, spiritual and historical significance of Bulahdelah Mountain to Aboriginal people as a sacred place and a place of healing. Bulahdelah Mountain was also a significant place of manufacture for trade for the Worimi and was therefore significant economically.

Bulahdelah's Sacred Healing Stream: a traditional Worimi birthing place

In this section we consider evidence that the base of the mountain was a women's place of healing. Worimi women used the healing stream found at the base of Bulahdelah Mountain

[74] Navin Officer Heritage Consultants. The Bulahdelah (Alum Mountain) Alunite Mine Site-Complex Report: A Cultural Heritage Assessment, with reference to the Proposed Bulahdelah Pacific Highway Upgrade Route Option E (2001).
[75] Umwelt. Bulahdelah Mountain, 4.13.

for thousands of generations as a birthing place. The stream has been somewhat disturbed by roadworks in the last century, but this important cultural site once held alum water that had run-off the mountain, having been richly infused with alum during heavy rains when temperatures were above 20 degrees. Worimi women would travel to this sacred site in preparation for the birth of their babies.

Non-Aboriginal community members and National Parks and Wildlife Service officers report oral histories of Bulahdelah Mountain. The healing stream was used for birthing by Aboriginal women and was known as a women's site.

> The Aboriginal women used to go there to have the babies then the babies were placed into the stream for purification of the babies and then the women used to sit in the stream.[76]

Many locals today understand historically the stream was referred to as a healing stream but do not realise the water held powerful healing minerals. A medical study demonstrated that the improvement in patients treated with the alum mineral water almost reached the level of statistical significance with the findings being

> alum containing ferrous water may prove effective in the management of chronic inflammatory gynaecological disorders.[77]

The treatment group showed that the uterus decreased and psychic status of the patient improved compared to tap water, along with the patients' psychic status and relief of pain.[78]

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[76] Umwelt. Bulahdelah Mountain, 4.15.
[77] L. Zambo, M. Dekany, T. Bender. "The efficacy of alum-containing ferrous thermal water in the management of chronic inflammatory gynaecological disorders – a randomised controlled study". *European Journal of Obstetrics and Gynaecology and Reproductive Biology*, 140 (2008): 252-257.
[78] Zambo et al. "The efficacy of alum-containing ferrous thermal water in the management of chronic inflammatory gynaecological disorders", 252-257.

In the late 1930s a newspaper article reported a north coast healing stream that, when bathed in, would cure skin diseases with rapidity. The mud from this stream was used as a plaster to cover a variety of wounds and allowed to dry. When the mud fell off of its own accord, the wound would be cured. Wounds that had been witnessed to be healed by this mud-pack included badly gashed limbs.[79] Evidence suggests it is likely that this healing stream would be the Worimi healing stream located at the base of Bulahdelah Mountain. The 'mud' was likely a clay. The clays, such as montmorillonite and kaolin, found at Bulahdelah would be ideal healing clays that would naturally infuse with alum found in the healing stream and lend themselves to making a topical application as described in this newspaper article.[80]

The Healing Stream at the base of Bulahdelah Mountain caught the water containing soluble alum mineral as it came down the mountain during rainfall. When it rained at temperatures of 20 degrees Celsius or above, the alum would have dissolved easily as at this temperature it becomes highly soluble and would have travelled in the water to the stream at the mountain's base. The alum would have purified the water.[81] This sacred healing site was the birthplace of generations of Worimi. Oral tradition says the Worimi women used the healing stream for purification of both the mother and the child after childbirth, and that the stream was used to provide the many other health benefits associated with bathing in alum water.[82] The healing waters of Wingen were similarly infused with alum and bathed in, and taken internally, for

[79] "Aboriginal Remedies. North Coast NSW – Use of Mud Healing Waters", *The Australasian*, July 17, 1937, 15.
[80] Hall and Photos-Jones. "Accessing Past Beliefs and Practices"; R. B. Jenkins and J. E. Nethery. "The development of Early Permian sequences and hydrothermal alteration in the Myall Syncline, Central Eastern New South Wales". *Australian Journal of Earth Sciences*, 39, 223-237. (1992), https://doi.org/10.1080/08120099208728016
[81] Umwelt. Bulahdelah Mountain.
[82] Umwelt. Bulahdelah Mountain.

their healing properties.[83]

Local historians Malcolm and Adele Carrall have undertaken extensive research into the Aboriginal people of Bulahdelah over many years. Malcolm has been told the *karadji* carried mystery bags containing stones which were probably alunite. Adele believes based on the fact that the healing stream has sulphur from the alum, and the alum having hydrolised upon coming into contact with the water, the stream on the western side of the mountain could have been a healing stream. The alum stone could well have been used for healing purposes due to its sulphur content, which is ideal for cuts.[84] Aboriginal oral history certainly attests to the stream being a medicine place, a healing place and a place utilised for its healing properties during and after childbirth.[85]

The Sacred Waterhole

In this section we consider the sacred waterhole that was located at the summit of Bulahdelah Mountain as a sacred higher-initiation ceremonial site and the location of the Worimi medicinal alum workshop. The top of the mountain was also a burial site for Worimi *karadji*.

Dunggaiti Aboriginal Elder Ray Kelly Snr Snr, former Sites Officer for NSW National Parks and Wildlife Service, was told the mountain was traditionally a men's business place and was informed about the waterhole up on the mountain.[86]

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[83] Cara Cross, *Our Country, our healer: Aboriginal apothecaries of Burning Mountain, Aboriginal History,* 45 (2021): 83-108.
[84] Umwelt. *Bulahdelah Mountain*, 4.15.
[85] Umwelt. *Bulahdelah Mountain*; Navin Officer Heritage Consultants, *Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study*.
[86] Umwelt. *Bulahdelah Mountain;* Navin Officer Heritage Consultants, *Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study*.

Warren Mayers, Aboriginal National Parks and Wildlife Officer, has significant family connections to Bulahdelah Mountain and was told as a child that when the mining operations were extracting alunite from Bulahdelah Mountain the top 260 metres or so of the mountain was destroyed by mining blasts.[87] This destruction would have obliterated the sacred waterhole atop of the mount which was integral to the Worimi pharmaceutical industry's manufacturing process and desecrated the hallowed *karadji* burial site.

These oral histories relating to Bulahdelah Mountain include information that the mount was considered so sacred that burials for *karadji* occurred on the mount. The bodies of the *Karadji (Kadija or Wirrigen)* wrapped in paperbark, tied with vines and placed in platforms in the treetops.[88] The mountain has always been considered a spiritual place, with a bountiful supply of resources for Aboriginal people, including stones such as alumstone (alunite) and obsidian, water, plants and animals. Alunite and obsidian would have been valuable items of trade in their raw state, both having multi-use applications. Obsidian, sharpened, could have been utilised by Aboriginal people in the cleaning of skins and alum was used to preserve them.

Mayers recounted that he had been passed knowledge that the top of the mountain was a place of men's business and that bodies had been placed on racks then, later, moved up to the mountain top.[89] Mayers' connection to Bulahdelah Mountain, and that of his extended family, is indeed significant and multi-generational. Descendants are aware that certain members of

[87] Umwelt. *Bulahdelah Mountain*; Navin Officer Heritage Consultants, *Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study*.
[88] Umwelt. Bulahdelah Mountain, 4.13.
[89] Umwelt. *Bulahdelah Mountain*; Navin Officer Heritage Consultants, *Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study*.

the Mayers family returned to the mountain regularly, even after the commercial mining campaign had begun, to continue to access the mountain's medicinal resources.
Many Aboriginal people get very strong feelings on the mountain often refusing to go to the top, however it is my experience that it is a peaceful place.

The Aboriginal Cultural Heritage Officer at Purfleet-Taree Local Aboriginal Land Council, Mick Leon, has also worked at Forster Local Aboriginal Land Council and as Cultural Heritage Officer for the National Parks and Wildlife Service. Mick Leon and has respectfully made it known that:

> There is a lot of knowledge still in the community that the community may not want to disclose…and that information should stay with those people and not be disclosed[90]

The Worimi *karadji* were the knowledge holders of medicinal cultural knowledge and it was the *karadji* who chose who would become their apprentices. Traditionally, Worimi *karadji* needed to proceed through a higher initiation degree called *Bumban* to confirm their status as healer.[91] This additional qualification would take a further six months. This higher initiation degree was reserved only for those elected by the Elders to become *karadji*, and usually involved the postulant being passed through the waters of a sacred waterhole, or *nambi*, by other *karadji.* The life-giving water of this sacred waterhole was infused with curative properties and sick people would be healed by immersing themselves in it.[92]

Knowledge held by the *karadji* was well-guarded and highly valued. University of Sydney anthropologist, Adolphus Peter Elkin believed it to be well-known within New South Wales

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[90] Umwelt. *Bulahdelah Mountain,* 4.11.
[91] Elkin, "Notes on the social organisation of the Worimi".
[92] Elkin, *Aboriginal Men of High Degree*, 82-83.

that the *karadji* forbade ordinary people 'to enter a waterhole over which a rainbow is passing; if they did enter they would learn the secret of the medicine man's powers'.[93] The waterhole at the top of Bulahdelah Mountain, and the healing stream at its base, would have been full of dissolved alum in mild to warm weather following a rain shower and the water likely would have appeared cloudy. Seed crystals may have even begun to form at this time, presenting a strong likelihood that the *karadji's* secret knowledge of how the waters gained their curative properties would have been revealed. Cultural stories often feature healer's stones, quartz, rainbow snakes and other magical substances being found or sourced 'at the foot of the rainbow'[94] or having 'come down the rainbow from the sky to the waterhole'[95].

Aboriginal Medicinal Crystals

In this section we consider the medicinal crystals used by the *karadji*. Medicinal crystals used by the *karadji* were known to hold a very mystical significance and the colonisers recorded that they were never to be shown to women or uninitiated persons. No person that was uninitiated were allowed to touch these crystals. [96] A breach of this law may render both the man who allows an uninitiated person to see the crystal and the uninitiated person liable for death or the protection of Baime.[97] Sacred stones and crystals are described by early colonial observers as being the size and shape of a lemon[98] and as having been given to the *karadji* by benevolent Ancestral Dreamtime spirit beings that dwell in mineral springs.[99] Ancestral

[93] A. P. Elkin, *The Australian Aborigines: how to understand them* understand them. Sydney: Angus and Robertson, 1938, 330.
[94] Elkin, *The Australian Aborigines*, 330.
[95] Elkin, *The Australian Aborigines*, 330.
[96] Elkin, *Aboriginal Men of High Degree*, 99.
[97] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury,* 8 August, 1896, 11.
[98] Elkin, *Aboriginal Men of High Degree*, 92; "The Murruba Gibbers of the Australian Aborigines", 1896, 11.
[99] J. Mathew, *Two Representative Tribes of Queensland*, London: T. Fisher Unwin, 1910:170-72, 174-76 in Elkin, *Aboriginal Men of High Degree*, 97.

Dreamtime spirit beings are also associated with quarries where valued stones were mined in both northern and southern parts of the continent.[100]

With the range of ailments alum cured, crystallised alum ensured ease of transport for Aboriginal people. Crystallised alum is still used worldwide as a styptic, a natural deodorant and remedy for tick, mosquito and sandfly bites. The multi-use application of alum, and the ease of which alum crystals can be returned to powder by crushing the crystal, leaves little wonder why alum crystals were of such high import and guarded by the *karadji*.

One example of the traditional laws around the viewing of these sacred crystals being upheld into the nineteenth century we find in Dungog with the Gringai clan. In August 1835 a Gringai man, whose name is not available to us but that was referred to by the colonisers at the time as 'Charley', was put on trial in the Supreme Court. Reverend Threlkeld acted as his interpreter, and it is from Threlkeld's account that we come to understand the Gringai man's actions that saw him on trial for murder. Archival and newspaper sources from this period interpret the Gringai man's actions as retaliatory warfare, Threlkeld reported that:

> In August last I was again subpoenaed to the Supreme Court, in consequence of outrages having been committed by the Aborigines in the vicinity of Williams' River; when another Black, named Charley, was found guilty of murder, which he did not deny, even when arraigned, but pleaded in justification the custom of his nation, justifying himself on the ground that, a Talisman, named *Mura-mai*, was taken from him by the Englishman, who with others were keeping a Black Woman amongst them, was pulled to pieces by him, and shewn to the Black Woman which according

[100] P. Tacon, "Ochre, clay, stone and art: the symbolic importance of minerals as life-force among Aboriginal peoples of northern and central Australia" in N. Boivin (ed,), *Soils, Stones and Symbols Cultural Perceptions of the mineral world*, London: Routledge, 2005, 31-41, doi: 10.4324/9781315066622

> to their superstitious notions, subjects all the parties to the punishment of death; and further, that he was deputed with others, by his tribe, to enforce the penalty, which he too faithfully performed.[101]

The talisman described was a sacred crystal. Referred to by Threlkeld as *Mura-mai*, the talisman is named from the Gathang word, *murruma* which translates *to make, to construct, hand-made, well-made*.[102] This sacred crystal was hand made, and hand-made well. It is more than likely to have been an alum crystal, made from the alunite on Bulahdelah Mountain by the Worimi *karadji.*

This Gringai man became the first and only person to be hanged in Dungog for enforcing his traditional tribal lore. His compliance to cultural lore saw him become victim of the coloniser's laws in the spring of 1835.[103]

The identity, or manhood if you like, of each initiated man is intricately tied to sacred stones

> European accounts detailing the initiation, or bora ceremony, of the Gringai speak of the new initiate being presented with one of these sacred, white stones which was described as being 'a white stone of clear crystal quartz, which must not be shown to a woman on pain of death, though he always carries it about on his person'.[104]

The majority of the Aboriginal community honoured the instructions of their Elders by refusing to discuss these sacred objects with the colonists. Aboriginal people understood the

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[101] L. E. Threlkeld, "Mission to the Aborigines, Annual Report 1835," *Sydney Gazette*, July 16, 1836, 2.
[102] Personal conversation with Noeleen Lumby, Research Fellow, Macquarie University, 3 December 2022.
[103] Williams Valley History, "Aboriginal People: The Gringai: History in the Williams River Valley: Past events on the Williams River, Salisbury, Underbank, Bandon Grove, Bendolba, Dungog, Brookfield, Glen William, Clarence Town and all between", https://williamsvalleyhistory.org/aborigines-gringai/.
[104] Rusticus, "The Aborigines", *Evening News,* September 21, 1895, 2.

severity of cultural lore surrounding these healing crystals was directly related to their importance as a life-giving medicine. Aboriginal people's secrecy and determination to hide these sacred objects only enhanced colonial curiosity.[105]

The colonists wrongfully assumed Aboriginal healing crystals were merely ritualistic, superstitious or religious objects. They did not understand the medicinal value of the stones, and Aboriginal people carefully guarded their cultural knowledge because of the high value these stones had in community life and almost certainly to protect the unique source of their medicine from the usurpers.[106]

Despite the colonist's assumptions, Aboriginal people had been using minerals in various ways and forms since the Dreaming. Pigments made from minerals, ochre and other products of the earth were utilised across the continent for ceremony, art and medicine from the Pleistocene. Evidence of red ochre pigments were found in the Mungo III burial pointing to their use in ceremony and decoration.[107] 'Painting and ceremony associated with one's final ritual returns the human spirit to ancestral lands'.[108]

Sharpened crystal quartz, sharpened so skilfully it would act as a razor, was witnessed by colonial observers as making up part of the medical equipment carried by the *karadji*[109]. The

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[105] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury,* 8 August, 1896, 11; E. O. W. Palmer, "Dusky Memories. Life of the Australian Black. Part II", *The Gwydir Examiner and Moree General Advertiser* July 30, 1898, 1; B. McKiernan, "Some notes on the Aborigines of the Lower Hunter River, NSW". *Anthropos* (1911): 885-892.
[106] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury,* 8 August, 1896, 11; Elkin, *Aboriginal Men of High Degree,* 4.
[107] Tacon, "Ochre, clay, stone and art: the symbolic importance of minerals as life-force among Aboriginal peoples of northern and central Australia" in N. Boivin (ed,), *Soils, Stones and Symbols Cultural Perceptions of the mineral world*, 39.
[108] Tacon, "Ochre, clay, stone and art: the symbolic importance of minerals as life-force among Aboriginal peoples of northern and central Australia" in N. Boivin (ed,), *Soils, Stones and Symbols Cultural Perceptions of the mineral world*, 39.
[109] "Bobby Budgeree, M.D. An Aboriginal Doctor's Methods", *The Land*, April 23, 1937, 16.

prevailing assumption by the colonisers that all the *karadji's* white, crystallised stones were quartz crystals was false.[110] Despite colonists being denied the chance to examine these healing crystals by the *karadji* themselves, the presumption that the colonists had identified the crystals correctly with only a glimpse of them continued and prevailed.[111]

The very few who were able to get close enough to the *karadji's* sacred healing crystals described these crystals as smoothed semi-transparent, ellipsoid and resembling the shape and size of a small lemon.

There are scant archival records of any early settler-colonists gaining access to sacred Aboriginal crystals. Crystallised clear quartz, alum, argonite and calcite can be visually misidentified and mistaken for one another by geologists. In 1881, two sacred lemon shaped crystals, called *Murruba Gibbers* by Aboriginal people, were stolen from their hiding spot near an Aboriginal camp near the Bellingen River by a non-Indigenous woman.[112] This woman, Mrs Skeet, was asked many times to return these items by the Gumbaynggirr people that she had stolen them from. Despite the Gumbaynggirr's many pleas, the woman refused, knowing the high cultural value of these sacred items.

> The circumstances under which these sacred mystic symbols of the Aborigines came into the possession of Europeans are strongly assertive of their absolute identity with

[110] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury,* August 8, 1896, 11. Umwelt. *Bulahdelah Mountain*, 4.11; W. J. Enright, "Two Sacred Crystals". *Science of Man and Journal of the Royal Anthropological Society of Australasia.* 9: 6, (June 1907): 95, 9: 9, (September, 1907): 135, 9: 10, (October, 1907): 153.
[111] Elkin, *Aboriginal Men of High Degree*, 18-20, 22, 33, 78, 79, 81, 83, 85, 89, 91-93, 97-99, 114, 151; "The Early Day Aborigines." *The Wingham Chronicle and Manning River Observer,* 26 June 1925, 8.
[112] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury,* August 8, 1896, 11. Walter John Enright, "Two Sacred Crystals". *Science of Man and Journal of the Royal Anthropological Society of Australasia.* 9: 6 (June 1907): 95.

> the far famed and much discussed but hitherto unprocurable '*Murrubagibbers*' of the Australian Aboriginal witch doctors.[113]

Mr W. A. Squire was a member of the Maitland Scientific Society and organised a number of public lectures in his capacity as a member of the committee and the society's Vice President. His topics covered Aboriginal myth and ceremonial practice. He was not a scientist, nor a geologist and some of his work has been said to have been plagiarised from previously published works.[114] In a paper titled 'Ritual, myth and customs of the Australian Aborigines: a short study in comparative ethnology' Squires stated that

> Just the other day a resident of West Maitland told me that if he had the good fortune to be able to touch a certain piece of wood, which he informed me existed, he would be cured of all his complaints. Some years ago, on the Clarence, an [A]borigine told me that he had a *gibber*, or quartz-crystal, by which he could cure toothache and many other evils man is heir to; and I have been endeavouring to ascertain the difference, even in degree, between these two primitive ideas.[115]

Squire's assumption that the *gibber*, the Gathang word for stone or crystal[116], had no medicinal value and the idea primitive was dismissive to say the least. *Gibbers*, crystals or stones, could be made from many different minerals, such as argonite, alum, sulphur or quartz. Squire's Aboriginal man from the Clarence stated he used his *gibber* to cure toothache. A *gibber* of alum or sulphur would have cured infections efficaciously, and a

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[113] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury*, August 8, 1896, 11.
[114] G. Di Gravio, Hunter Living Histories, "The Life, Work and Tragic End of William Arthur Squire (1867 – 1908), posted June 22, 2018 by Special Collections, https://hunterlivinghistories.com/2018/06/22/william-arthur-squire/
[115] W. A. Squire. *Ritual, myth and customs of the Australian Aborigines: a short study in comparative ethnology*. West Maitland, NSW, 1896, 81, from http://nla.gov.au/nla.obj-508161885
[116] Amanda Lissarrague and Muurrbay Aboriginal Language and Culture Co-operative. *A grammar and dictionary of Gathang: the language of the Birrbay, Guringay and Warrimay.* Nambucca Heads: Muurrbay Aboriginal Language and Culture Co-operative, 2010.

gibber of argonite would have likely proved effective, dependent on the cause of the toothache. Recent research states

> Filling bone defects, treatment of early dental caries lesions and generating neoformed bone tissue using by different types of nanoparticulate calcium carbonate has also shown notable applications…$CaCO_3$ has three anhydrous crystalline polymorphs including calcite, aragonite and vaterite ... Aragonite type occurs in orthorhombic system and has got exclusive research attention because of its biocompatible properties. According to literature, aragonite can be resolved, integrated and replaced by bone. Aragonite polymorph is denser than calcite and has also been used for the designing of the anticancer drug carrier and scaffold for bone repair and tissue engineering… An irreversible loss of hard tissue of tooth due to a chemical process without involvement of microorganisms is known as tooth erosion. According to researchers, one of the important external factors in dental erosion is eating/drinking of acidic products. Esmaeili Khoozani et al prepared calcium carbonate nanoparticle with milling the eggshells using by a high energy planetary ball mill. According to their results, adding calcium carbonate nanoparticles to soft drinks can reduce or prevent tooth erosion and the modification of these drinks is critical to reduce the risk of dental erosion. Treatment of early caries lesions using by different types of nonparticulate calcium carbonate or apatite has shown noteworthy applications. According to researchers, the mechanical properties of releasing composites containing the calcium and phosphate are comparable with commercial hybrid composites… Furthermore, filling of bone defects, treatment of early dental caries

> lesions and producing of new bone tissue using by different types of calcium carbonate nanomaterials has also shown outstanding applications.[117]

In 1896 a Mr A. J. Prentice, solicitor, displayed the two *Murruba Gibber*s some 16 years after they were stolen purporting to have expertise as a geologist.[118] Prentice presented them to the Maitland Scientific Society, where it was noted that the two stones had been manufactured together:

> The mineral was aragonite, one of the crystalline forms of limestone, and its chemical composition was calcium carbonate, the same as the closely allied mineral calcite or spar, which it much resembled. The stones had evidently been ground down from a large aragonite crystalline mass. The colour of each stone was a yellowish white, and the lustre was translucent. They must have been artificially made, as under natural conditions no substance would attain such a shape, especially aragonite, which would splinter and break off along the plans of its crystallization.[119]

Both Squires and Prentice were untrained in geology and unqualified to identify these hand-made stones as argonite. In fact, Cambridge educated scientist, chemist and professor in geology and mineralogy, Archibald Liversidge, author of *The Minerals of NSW* misidentified crystallised alum found on Burning Mountain, Wingen as kalinite when he labelled a sample bequeathed to the Natural History Museum, London as such. Aragonite (CaCO3) is a carbonite mineral which naturally occurs as one of two crystal forms of calcium carbonate, the other being calcite. If an educated expert such as Liversidge can misidentify a sample of

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[117] Solmaz Maleki Dizai, Mohammad Barzegar-Jalali, Mohammed Hossein Zarrintan, Khosro Adibkia, Farzaneh Lotfipour, "Calcium Carbonate Nanoparticles: Potential in Bone and Tooth Disorders", *Pharmaceutical Sciences*, 20 (March 2015): 175-182.
[118] "Maitland Scientific Society", *Newcastle Morning Herald and Miners' Advocate,* August 4, 1896, 8.
[119] "Maitland Scientific Society", 8.

crystallised alum as kalinite[120], then it stands to reason that both Squires and Prentice may have misidentified crystallised alum as argonite. Argonite is not able to be differentiated from calcite by basic visual inspection, and usually require analysis by X-ray diffraction.[121] Further, when comparing alunite to argonite, alunite's crystal habits appear as tabular to flattened rhombohedral shapes, these 'rhomoboedrons' are actually two trigonal pyramids, but are often looked at and believed to be rhomic, ie. rhomoboedrons.[122]

Squires views on Aboriginal people as savages being driven to extinction surely tainted his interpretation of the cultural lore and significance of these manufactured sacred crystals. Squires' believed the plight of Aboriginal people was due to what he perceived to be their inferiority, stating

> The chiefs of the tribes – noble-minded men of their race – felt degraded when hounded down by a gaol-bird from across the sea, and before the thunder of small arms the sorcerers and *Karadjis* became aware of their impotence to cope with the magic of the invader.
>
> In losing all confidence in themselves they lost all pleasure in life, and then came the demon rum. Dozens of the tribes died daily, one single year saw the death and dispersion of nearly all the Wollumbi tribes, which in the thirties could be counted in hundreds, and in 1848 numbered 54. The death warrant of the [A]borigines has long since been signed. Our civilisation extirpates the tribes it invades, because they cannot instantly bend themselves to the transformation which has cost us twenty centuries of solid work. Born a hunter he will die a hunter, and will go silently down

[120] Personal conversation with curator, Robin Hansen, UK National History Museum, 2019, re: specimen BM.1927,1676 left in personal bequest by Prof. Archibald Liversidge FRS, labelled as collected from 'Mt Wingen, Bibane (sic), NSW, Australia'.
[121] A. L. Guth. "Aragonite: Mistaken Identities", *Rocks and Minerals* 85: 5 (2010) 456-458.
[122] Mineral Gallery, "The Mineral Alunite", http://www.galleries.com/alunite.

> into that dark sea of oblivion which engulfed the Incas, the Aztecs, the Mayas and the Tasmanians, leaving behind him a record of which many superior races might be proud, but which has yet many chapters to be written. May the information for these chapters be collected before the tribes have entirely disappeared.[123]

These two sacred stones were believed by both Squires and Prentice to be the only sacred stones of their kind that were in the possession of the colonists considering them to have fallen outside the control of Aboriginal people. Aboriginal people believe that obtaining such a stone without the proper cultural protocols results in the bearer being cursed. It is not known how Mrs Skeet met her end, but both Squires and Prentice ended their lives with self-inflicted bullet wounds.[124] Mrs Skeet continued her disrespect for Aboriginal culture, reported to have quarried fossils and sent for display Aboriginal traditional engravings she had dug up.[125] This disregard for Aboriginal cultural heritage was typical behaviour of non-Indigenous people in this era, and has continued until very recently.[126]

The ellipsoid sacred stones, or *Murruba Gibbers,* had been manufactured together from the same mineral and were easily chipped.[127] Aside from sharing the name given to these crystals, the Aboriginal people consulted would not proffer any further information, stating there was an obligation for them not to speak of the stones to a woman or a non-Indigeous man, under fear of death[128].

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[123] Squire, *Ritual, myth and customs of the Australian Aborigines*, 89.
[124] "Mr. A. J. Prentice". *The Maitland Daily Mercury*, July 30, 1936, 4. Retrieved November 7, 2022, from http://nla.gov.au/nla.news-article125373739; G. Di Gravio, Hunter Living Histories, "The Life, Work and Tragic End of William Arthur Squire (1867 – 1908), posted June 22, 2018 by Special Collections, https://hunterlivinghistories.com/2018/06/22/william-arthur-squire/
[125] "Fossils and Carvings", *The Australian Star,* May 24, 1901, 4.
[126] See Tom Griffiths, *Hunters and Collectors: The Antiquarian Imagination in Australia*, Cambridge: Cambridge University Press. 1996.
[127] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury*. August 8, 1896, 11; W. J. Enright, "Two Sacred Crystals," *Science of Man and Journal of the Royal Anthropological Society of Australasia*.9: 6, (June 1907): 95.
[128] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury*. August 8, 1896, 11; Enright, "Two Sacred Crystals," *Science of Man and Journal of the Royal Anthropological Society of*

The name, *Murruba Gibbers* can be translated from the Gathang language in the simplest form as, 'made stones'; the words used denote these crystals were made by hand, and considered to be 'good'.[129] Crystal stones were found in the possession of an Aboriginal man at Mungindi on the NSW and QLD border, and more crystal stones with the tribe on the Gregory River in North Queensland.[130] William Horn, in his report *Horn Scientific Expedition to Central Australia* as quoted by Enright, stated these stones were used by 'the Aruntas' of Central Australia in their ceremonies for the making of their *karadji*, and that:

> there is, however, no doubt that these articles extend over a very wide range of Central Australia…wherever they are found they appear to be objects concerning which the same kind of mystery and concealment exists. They, particularly the stones, appear to be handed down as heirlooms…they are reluctantly spoken of and parted with, and it was exceedingly difficult to extract any information concerning their significance or application[131]

Enright observed some crystallised stones matching these specimens that appeared older, describing other crystals as clearly being of recent manufacture.[132] Horn had noted:

> the form of the stones is frequently of an oval ellipsoidal or a symmetrical slab of mucaceous (*sic*) rock.[133]

Australasia, 9: 9, (September 1907): 135; W. J. Enright, "Two Sacred Crystals," *Science of Man and Journal of the Royal Anthropological Society of Australasia,* 9: 10 (October 1907):153.

[129] Personal conversations with Dr Ray Kelly Snr, University of Newcastle and Noeleen Lumby, Research Fellow, Macquarie University.

[130] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury*, August 8, 1896.

[131] William Horn, as quoted by W. J. Enright, "Two Sacred Crystals". *Science of Man and Journal of the Royal Anthropological Society of Australasia.* 9:10 (October 1907):153.

[132] Walter John Enright. "Two Sacred Crystals". *Science of Man*. 9: 6 (June, 1907): 95; 9: 9, (September 1907): 135; 9: 10 (October 1907):153.

[133] Mica, or micaceous rock, is any group of hydrous potassium, aluminium silicate minerals; however 'micaceous' is used to describe items resembling mica, that is, items that are sparkling or brilliant: William Horn, as quoted by W. J. Enright, "Two Sacred Crystals." *Science of Man and Journal of the Royal Anthropological Society of Australasia.* 9:10 (October 1907): 153.

The crystals Mrs Skeet obtained were thought to have been ground-down aragonite, a crystalline form of limestone. Enright and other observers believed aragonite was the most suitable mineral the *karadji* could obtain to make such sacred emblems.[134] Without any knowledge of other minerals such as alum available to Aboriginal people with an appearance very similar to calcite, limestone and aragonite, the authors, without speaking to the local tribal Elders, would have formed their conclusions solely on the information available.

Aboriginal people manufactured crystals that were highly valued by the *karadji* and tribal elders.[135] While these stones may have been aragonite or calcite[136], it is likely they were misidentified alum crystals which were traditionally manufactured, and traded, by Aboriginal people and were of significant medical value, alum being an effective styptic, astringent, emetic and treatment for dysentery. [137]

Alum crystals can appear similar in appearance to quartz crystals, aragonite, calcite and limestone, but they are not as hard as quartz and can be easily chipped.[138] Not knowing of the prevalence and access to alunite, Prentice and Squires believed that aragonite 'and calcite would be the best white minerals available to the blacks for easy grinding to the required shape, but which would, when ground down, keep its form fairly well'.[139]

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[134] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury*. August 8, 1896, 11. W. J. Enright, "Two Sacred Crystals". *Science of Man.* 9: 6 (June 1907): 95.
[135] "The Murruba Gibbers of the Australian Aborigines", 11; Umwelt. *Bulahdelah Mountain*.
[136] Aragonite is not able to be differentiated from calcite by basic visual inspection, and usually requires analysis by x-ray diffraction, as noted in Guth, "Aragonite: Mistaken Identities": 456-458.
[137] Umwelt. *Bulahdelah Mountain*; M. K. Organ. "Illawarra South Coast Aborigines 1770-1900." Report to the Australian Institute of Aboriginal and Torres Strait Islander Affairs, Canberra. Vol.2. 1993.
[138] As per Moh's Hardness Scale. Mohs Hardness Scale is comprised of reference minerals which are numbered 1 through 10 used to determine the relative hardness of certain minerals and other objects.
[139] "The Murruba Gibbers of the Australian Aborigines", 11.

As the name, *Murruba Gibbers* attests, these stones were "made stones" [see Figure 7]. The definition itself denotes these crystals were made by hand and considered to be 'good'.[140] Aragonite was suspected to have been used to be ground down to lemon-like shapes by Aboriginal people to create these stones; the non-Indigenous observers determining the stones were hand-fashioned. Given the facts, these *Murruba Gibbers* may have been misidentified alum crystals. Alum crystals are soft, around 2-2.5 on Moh's scale with aragonite between 3.5 and 4. Alunite, when crystallised, has a hardness of 3.5-4 on Moh's scale which matches that of aragonite. Before mining blasts destroyed Bulahdelah Mountain's gleaming summit it was described as a massive white sparkling crystal with many colonial observers believing it to be made from limestone, itself mainly comprised of aragonite and calcite. Without knowledge of the massive supply of alunite available to Aboriginal people, nor the sophisticated geological knowledge to identify crystallised alum correctly, colonists may have similarly misidentified the manufactured sacred crystallised alum stones as aragonite.

Worimi Country holds the world's largest above ground source alunitic rock, or alunite[141] Bulahdelah Mountain which is an Aboriginal place, considered a sacred healing site and was formerly the location of the Worimi *karadji's* alum crystal workshop where sacred medicinal crystals were manufactured and later traded with other Aboriginal nations. Cultural lore and the secrecy dictated that medicinal alum crystals, considered sacred stones, were mostly kept hidden from the colonisers. This secrecy was protective in nature, lore put in place to prevent such a valuable medicinal resource from being taken and not returned to Aboriginal people, as was the case with Mrs Skeet and the *Murruba Gibbers,* or misued. The cultural lore of

[140] Lissarrague and Muurrbay Aboriginal Language and Culture Co-operative. *A grammar and dictionary of Gathang*.
[141] Hydrated aluminium potassium sulphate: Umwelt. *Bulahdelah Mountain,* 2.2.

secrecy also prevented the colonisers from identifying the Mid-North Coast of New South Wales as the location of such an abundant and valuable supply of alunitic rock, which allowed the Worimi people to continue to manufacture crystallised alum stones at Bulahdelah Mountain until the end of the 1870s. At this time, the Worimi people, although much fewer in number in the Myall Lakes area in comparison to just a century before, continued to obtain traditional medicines, both plant-based and of mineral origin, from Bulahdelah Mountain and used the healing waters of Bulahdelah's healing stream in a continuation of traditional healing practices used for generations.

Chapter 5

The Mayers Family's Continuation of Cultural Healing Practice

"At the Sunrise Ceremony, I meditate and ask the Great Spirit for direction.

My hands fill with electricity. I touch you and you feel it, too.

I heal people this way. My Grandmother did that, too.

I learned all about that when I was a young fellow…

We learn to respect the Elders who hand on the Law.

The Elders guard the Law and the Law guards the people. This is the

Law that comes from the mountain. The mountain teaches the dreaming."

Guboo Ted Thomas

The Mayers family were knowledge holders of Worimi cultural healing practice and generously provided medical services to the community – both Aboriginal and non-Indigenous. Many members of the Mayers family provided medical services to the people of the Great Lakes area, which shows a continuation of traditional Worimi medical expertise

being practiced well into the twentieth century. My family have sourced medicines, both mineral and botanical, from the mountain for generations, and continue to do so today.

Warren Mayers, Aboriginal National Parks and Wildlife Officer, is related to me through our family lines tracing back to convict Thomas Mayers, and his Aboriginal wife, Mary Ann Perry[1]. Said to be the daughter of soldier John Perry of the 1/14th Regiment of Foot and a Worimi woman who is unnamed in colonial records, Mary Ann Perry was in fact a full-blooded Worimi woman and known as a medicine woman.[2] Worimi women during this period of time whose Aboriginal names were Moorinna often had their names anglicised to 'Mary Ann', as was the case with Worimi woman Mary Ann Bugg[3], the consort of the infamous bushranger, Fred Ward. Fred Ward knew members of the Mayers' family, having become acquainted when he was working in the saw pit at Bulahdelah.[4]

Mary Ann Mayers passed on Aboriginal knowledge to her convict husband for the benefit of their family and the newly growing diverse community around them. Thomas Mayers himself, and Thomas and Mary Ann's son, Joseph Mayers, were both renown in the district for their medical services, which were described as nothing short of miraculous.[5] Prior to his relationship with Mary Ann, there is no record of Thomas providing medical services, undergoing medical training or having any medical knowledge whatsoever. The Mayers'

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[1] Mary Ann Mayers' death certificate states her maiden name as Terry. NSW Death Certificate 9801/1897.
[2] Bert Reynolds, "Bert Reynolds - Manager, South Maitland Railways". *University of Newcastle Part 1/1 Living Histories,* Recorded on 31 January 1979. https://livinghistories.newcastle.edu.au/nodes/view/55818, transcript at 15:43.
[3] John Ramsland, *The Rainbow Beach Man: The life and times of Les Ridgeway Worimi Elder,* Melbourne: Brolga Publishing, 2009, 29.
[4] "Tuncurry Lady 100 Years Old To-Day", *The Manning River Times and Advocate for the Northern Coast Districts of NSW*, October 13, 1951, 1.
[5] "Healing Hands: Winds of Change", *Great Lakes Advocate,* July 15, 1982.

family were highly regarded and respected within the community for their healing services, which included bone-setting and midwifery skills.[6]

Thomas Mayers was born in Manchester, England and became an engraver of copper and copper plate printing undertaking an apprenticeship under his father in the family business. He was deported to Australia after appearing before the Manchester Quarter Sessions on 26 April 1830 for stealing clothes, for which he received a sentence of 7 years and 6 months, arriving in Sydney on 7 February 1831. Thomas Mayers was assigned to work on the Hunter River at Fullarton, Raymond Terrace. Thomas Mayers was granted his Certificate of Freedom on July 24, 1838.[7] In 1853 he bought 640 acres on the Maclean River (branch of Cooloongolook River, April 13, 1853) 1280 acres slightly north of previous lot; and further lots in the Mayers Point area, which was named after him. Thus, he worked as a grazier, timber worker, road maker and a host of other jobs.[8]

In 1841 the first of Thomas' and Mary Ann's eight children were born. Although no marriage records can be found, the birth certificates of their children state Thomas and Mary Ann are married. In 1858, only a few months after the birth of their son Joseph, my great-grandfather, Thomas Mayers became the first title holder of 66 acres of land in Portion 77, Parish of Bulahdelah, which was granted on 30 December that year.[9] By this time, despite no formal medical training, Thomas was known in the community as 'healer' and 'bonesetter' using skills he had learned from his Aboriginal wife over the previous 17 years.[10]

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[6] "Healing Hands: Winds of Change", 1982.
[7] "Healing Hands: Winds of Change", 1982.
[8] "Healing Hands: Winds of Change", 1982.
[9] "Healing Hands: Winds of Change", 1982.
[10] "Healing Hands: Winds of Change", 1982.

Local Nabiac man, William Henry Ralston McClymont's reputation as 'healer' was second only to Thomas Mayers in the Great Lakes area.[11] William Henry Ralston McClymont was married to Annie Butler, a Biripi woman. These two men had more in common than being deemed 'healer' by their local community, or than being men who, despite no medical training, managed to serve their community selflessly in providing medical assistance as required. The key to their medical knowledge and skill can be found in the fact that both men were partnered with Aboriginal women from whom it is likely that they gained their expertise in bone-setting and medical practices. Descendants consider that these women gave them their Aboriginality and a direct link to what Aboriginal life was like before colonisation and passed down cultural practices and traditional knowledge of both bush tucker and bush medicine. This knowledge and cultural processes are still in use today.[12]

Worimi women were the matriarchs of several Myall Lakes families. These women continued their cultural practices of going into the bush to gather plants, making potions for every ailment. These women were cognisant of where minerals were abundant, with some women sourcing the gold for their own wedding rings from the bush. These women continued to tell their stories and pass down cultural knowledge, oral histories and Aboriginal spirituality to their children, grandchildren and great-grandchildren. [13]

Despite the cultural knowledge and healing practices shared by these women being a life-giving service to the non-Indigenous community of the Myall Lakes area, there is little mention of them in the historical record. The gratitude of the community, and glory, was instead bestowed upon their husbands:

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[11] "Healing Hands: Winds of Change", 1982.
[12] Julianne Butler and Kathleen Butler-Mcilwraith, "Aboriginal Grandmothers and the Living Memorial of Oral History", *Journal of Interdisciplinary Gender Studies* 9, No.1, (2004): 4-16.
[13] Butler and Butler-Mcilwraith, "Aboriginal Grandmothers and the Living Memorial of Oral History": 4-16.

> Thomas Mayers (Meyers – alternate spelling) resided in the Myall area and was notable far and wide for his power to treat the ailing and injured very successfully. One often hears stories of almost miraculous cures – and probably in that day these appeared so… there is no doubt that this man did perform sterling service in his attention to the ills of his fellows and with timber harvesting and milling as a major occupation there would no doubt be plenty of accidents, which required attention on the spot, and the nearest trained medical help would have been a long trip on a rough trail blazed through the forests to Stroud. So never let us minimise the importance of the work of Thomas Mayers.[14]

In 1875, the community in which he had worked so tirelessly and for no payment[15] presented Thomas Mayers - and his family - with a dinner and purse at Bulahdelah in gratitude for the medical assistance rendered over the years.[16] Thomas Mayers's response to the community's gratitude included the words:

> Whatever good has been done at my hands, was done with a free good will, and while I live I shall always feel it a pleasure to assist my distressed fellow creatures. With every good wish for the welfare of those among whom I have lived so many years most pleasantly.[17]

In 1884 there was a serious accident in Bungwahl Flat where a man was rendered unconscious after a shed had collapsed on him, crushing his ribs and causing other injuries. At 72, Thomas Mayers attended the man in need using the knowledge that had been passed

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[14] "Healing Hands: Winds of Change", 1982.
[15] "Bullah Delah", *The Maitland Mercury and Hunter River General Advertiser*, July 4, 1876, 5.
[16] "Bullah Delah", 5.
[17] "Bullah Delah", 5.

on to him. Thomas Mayers did not accept payment for his services. Services of Aboriginal doctors, and those given custodianship of Aboriginal healing knowledge such as Thomas Mayers, were highly valued by the communities in which they worked but would rarely accept payment. Aboriginal doctors would see the treatment of their family and communities and part of their kinship obligations. Gifts may be offered in reciprocation for the services, however there is a firm difference between payment and gifts because of the feeling that the treatment is offered to kin purely because of the relational connection.[18]

The positive social and psychological effects of having a person with such effective medical knowledge and skill in these remote areas cannot be underestimated. Western doctors were inaccessible for many, not only due to distance, but also the basic cost of services at this time. Doctors during the mid-nineteenth century were poorly equipped to diagnose or cure sickness. Rural and remote areas often were without a local doctor to call upon, an issue that still exists today in some rural and remote areas. There was also a huge amount of community distrust in medical doctors prior to the early 1900s.

Treatments from doctors usually entailed bleeding, purging and heavy drug doses. There was a great community distrust of doctors and hospitals in the 1800s. Hospitals were often seen as 'death houses'. Major advances in germ theory, the beginning of antiseptic surgery and the bacteriological discoveries of both Robert Koch and Louis Pasteur in the 1860s and 1870s saw dramatic decreases in mortality rates. This saw the public perception of hospitals slowly change, despite during the 1800's it was still normative for 17% of all hospital admittances to end in death.[19] Change to antiseptic surgery revolutionised medical practices and gave the

[18] J. Reid (ed), *Medicine and Health in Body, Land and Spirit: Health and Healing in Aboriginal Society*, University of QLD, 1982, 236.
[19] P. Davies. "A Cure For All Seasons: Health and Medicine In a Bush Community", *Journal of Australian Studies*, 25:70, (2001): 63-72.

medical profession more authority. At this time, doctors marginalised other health providers including herbalists, homeopaths and midwives as they sought to dominate the medical industry.[20]

Natural or 'bush' healers were trusted by rural and remote communities far above trained doctors in the early days of the colony. Healers operating in remote, regional, and rural communities would travel at all hours of the day and night by horseback, often through pouring rain risking exposure to the cold in soaking wet clothing chancing chest infections and colds.[21] Thomas Mayers and his family were kept busy with sawmill workers and graziers who were both at high risk of injury through their work. Something as seemingly simple as a splinter would often lead to blood poisoning. Bushfires and snakes were often also a threat to life for these workers.[22]

The isolation of many north coast pioneering families would have made community connections more valuable. At the time the Mayers family were operating as fee-free healers in the Myall Lakes community, doctors almost never made house-calls. In one example, a doctor was called to attend a young child from 26 miles away. The injured young boy was already deceased by the time of the doctor's arrival, however the doctor issued the boy's father with a bill for three times the father's weekly wage, despite not having had rendered any medical services.[23]

The Aboriginal women who had partnered with convicts, such as Mary Ann Mayers, Annie Butler and even Mary-Ann Bugg, the Worimi bushranger's partner, with their immense

[20] Davies. "A Cure For All Seasons": 63-72.
[21] Davies. "A Cure For All Seasons": 63-72.
[22] Davies. "A Cure For All Seasons": 63-72.
[23] Davies. "A Cure For All Seasons", 68.

knowledge of the environment and country's curative powers, clearly saved and prolonged many colonists' lives through sharing this knowledge.

Thomas Mayers died on July 2, 1896 and was buried at Paddy's Creek on the Myall Lakes, near Mayers Point which was named after him. [24] Despite being one of the founding members of St James Church, and the family credited with having built the church, family accounts state Thomas declined their offer of a burial plot in their church cemetery due to the fact that his wife would not be allowed burial on the grounds when her time came, due to her Aboriginality. Thomas instead requested to be buried in the thick clay by the creek in the traditional Aboriginal way.[25] Mary Ann Mayers died just over one year after Thomas on 31 August 1897 and was also buried at Paddy's Creek, near Bungwahl, NSW. [26] After Thomas' death in 1897 the local community rallied together to arrange for an obelisk to be erected in the grounds of the St James Church which bears the inscription

> Erected to the memory of Thomas Mayors by the people of Myall Lakes among whom he lived for 50 years, for his skilful aid to those inbodily suffering and his kindly assistance in time of need. A.D. 1897.[27]

The obelisk[28], and the ceremony held for its unveiling, starkly omits any mention of Mary Ann or her unfailing service to the community through her use of traditional medicinal skills and the legacy found in her training of many others around her in this knowledge. Most historical documentation fails to acknowledge Mary Ann contributions, focusing instead on

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[24] NSW Death Certificate no.11686/1896.
[25] Family oral history as passed down to me.
[26] NSW Death Certificate no.9801/1897.
[27] "Bungwahl", *Dungog Chronicle: Durham and Gloucester Advertiser*, October 29, 1897, 3.
[28] The obelisk was later moved to be located further down the hill outside the Community Hall at Bungwahl. Despite being gifted by the community to the Anglican Diocese, the church sold the St James Church property in recent years, in the face of huge community opposition.

her husband. This attempt to erase Mary Ann from the historical record continued into the 1980s when a newspaper report speaking of the healing legacy of the Mayers family make brief mention of Mary Ann, and marvel at the miraculous healing hands of the Mayers family without mentioning the Aboriginal source of their healing knowledge and skills.[29]

Worimi medicinal cultural knowledge was passed down to Thomas and Mary Ann Mayers' son, my great-grandfather Joseph Mayers. The impartation of this knowledge became a gift of healing that reached the entire Great Lakes community and a legacy that was passed down the generations. Joseph's wife, Jane Mayers, was born Jane DeLore in 1863 at Karuah. [30] Jane Mayers possessed no formal medical training whatsoever yet acted as a nurse and a midwife for over a thousand births in the district.[31] Jane gained her midwifery skills from assisting Mary Ann Mayers, her Aboriginal mother-in-law. Later, Jane assisted her own mother, Mary DeLore (nee Keleher), a native of County Clare, Ireland, who became known as 'Granny Renny'. Mary DeLore took over from Mary Ann Mayers as the local midwife.[32] In 1927 Jane Mayers was awarded a Certificate of Nursing from local medical men despite never having studied formally.[33] Jane Mayers continued to hold her registration until 1940, retiring at age 77. During her 40-year career in nursing, Jane Mayers operated the Nurse Mayers Hospital from her own home.[34] Nurse Mayers' treatment was holistic; her services covering the health, safety and mental well-being of her patients. Nurse Mayers' mother, known as Granny Renny, was active as a midwife, taking over at 32 years of age from Worimi woman Mary

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[29] "Healing Hands: Winds of Change", 1982.
[30] NSW Birth Certificate 12636/1863.
[31] Marilyn Boyd and Janine Roberts, "Nurse Jane Mayers", *MidCoast Stories*, https://midcoaststories.com/2021/06/nurse-jane-mayers/ see also "The Women's Page", *The Northern Champion*, (February 8, 1952), 3.
[32] "First 50 Years Of Tuncurry's History" *The Manning River Times and Advocate for the Northern Coast Districts of New South Wales,* July 31, 1953, 9 (Pix and Feature Supplement). Retrieved November 25, 2022, from http://nla.gov.au/nla.news-article173013780.
[33] NSW Medical Registers, Minute Books of Applications, 1927 and NSW Register of General Nurses as accessed via Ancestry.com.au; "Healing Hands: Winds of Change", 1982.
[34] Boyd and Roberts, "Nurse Jane Mayers".

Ann Mayers, whom had assisted in the birth of many of the babies in the district throughout the 1800s, and was present to welcome her own grandchildren into the world.[35] My great-grandmother, Granny Renny's daughter and Mary Ann Mayers' daughter-in-law became known locally as 'Granny Jane' and continued to serve the community as midwife using the skills learned from these women.

Worimi traditional healing practice knowledge holders

Joseph Mayers, healer and bonesetter and Nurse Jane Mayers

Worimi man Joseph Mayers was born in 1858 and was trained by his forebears as a natural healer and bonesetter. Joseph married Jane DeLore when she was 16, the pair having ridden 30 miles to Maitland on horseback to do so.[36] Jane Mayers had no formal medical education, accruing her incredible medical knowledge from her and her husband's ancestors. Together, Joseph and Jane Mayers were highly regarded and known among the community for their medical skill. Joseph Mayers provided medical services as a healer, as had his father and his mother before him. Joseph rendered medical services in the community as a bonesetter and healer without payment until his death in 1929.

Many colonial communities relied upon the skills of Aboriginal midwifes to ensure the safe delivery of their babies. The medical knowledge and skill of Aboriginal midwives was unsurpassed at this time. Aboriginal midwives were utilised by non-Indigenous medical men

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[35] "First 50 Years Of Tuncurry's History" *The Manning River Times and Advocate for the Northern Coast Districts of New South Wales* July 31, 1953: 9. This article in the *The Manning River Times and Advocate for the Northern Coast Districts of New South Wales* states that Granny Renny took over in the district upon the death of "Jane" Mayers in the late 1890s. It was Mary Ann Mayers that passed away 1897, when Granny Renny was 32 and it was Mary Ann Mayers that Granny Renny took over from. Jane Mayers took over from Granny Renny. Jane Mayers was Granny Renny's daughter and Mary Ann Mayers' daughter-in-law.
[36] "Obituary", *Newcastle Morning Herald and Miners' Advocate*, November 27, 1952, 7.

over and above non-Indigenous women. Aboriginal women utilised eucalyptus leaves for their antiseptic properties. Non-Indigenous doctors did not utilise any form of antiseptic during surgeries in Australia until the 1860s, and its use was not mainstream until around the turn of the century. The ever-present danger for non-Indigenous women giving birth during this time was puerperal fever, which was avoided when Aboriginal midwives were present during childbirth. This was such a problem amongst non-Indigenous women that

> The Sydney Women's Lying-in Hospital … was full of [puerperal fever]. Closed, scoured and painted anew inside and out, it still had its high death rate from the infection – showing tht the building as such was not at fault.[37]

The community relied upon and trusted the Mayers' women's excellent skills in midwifery. Worimi women had been birthing babies for generations on country, having cultural knowledge and access to a traditional birthing site and healing stream. As the brutal effects of colonisation crept forward, Worimi women not only lost access to the healing stream as Bulahdelah Mountain became a mining site but the effects of mining and development of the area permanently disrupted the natural flow of rainwater infused with curative minerals from reaching the stream as a catchment. The healing stream and its location are widely accepted in the Aboriginal community as being a traditional place of healing.

> The stream is a small tributary which drains a narrow catchment on the western slope of Bulahdelah Mountain. The creek flows along the northern boundary of Mountain Park at Bulahdelah and passes through an urban catchment in the Bulahdelah township. The creek line was vegetated with mature Eucalyptus forest and the sloped areas were substantially re-growth. There were cleared areas along the power line easements. The streamline had been previously impacted by the vegetation clearance and landfill associated with 'Mountain House'. In addition to this disturbance,

[37] Mary Gilmore, "Mary Gilmore's ARROWS", *Tribune*, February 8, 1961, 8.

> earthworks and landfill associated with the construction and demolition of the adjacent nineteenth century alunite processing works and installation of metal water pipes along the valley floor had also disturbed the streamline.[38]

Despite the loss of such a significant cultural site and specifically the loss of access to healing mineral-infused waters, Worimi women such as Mary Ann Mayers ensured the continuation of cultural birthing practice and knowledge. Traditional life having changed forever, Worimi women generously shared important life-giving cultural healing knowledge within the emerging communities of Aboriginal and non-Indigenous people that they lived.

[38] Great Lakes Council. Bulahdelah Cultural Heritage Assessment: Bulahdelah Residential Rezoning, RPS report prepared for Great Lakes Council, July 2010, report no PR103163. 2010:34.

Chapter 6

Commercialisation of Bulahdelah Mountain by the Colonists

"We cultivated our land, but in a way different from the white man.

We endeavoured to live with the land; they seemed to live off it.

I was taught to preserve, never to destroy."

Tom Dystra

Bulahdelah Mountain is now an Aboriginal Place in recognition of the historical, cultural and spiritual significance of the mount to the Worimi People. The Worimi people take care to pronounce the mountain's name "Boolah-Dillah", reflecting the traditional pronunciation. Since 2018, the area has displayed carved trees which were traditionally used as a form of communication and as signposts to mark travelling paths, boundaries and even burial sites. Evidence of traditionally scarred trees at Bulahdelah Mountain was found just over two decades ago. Restoring traditional dendroglyphs through the carving of the trees has been a way of demonstrating to visitors to the mountain thousands of years of management and custodianship of the area by the Worimi people.

The Great Rock

Just over a century ago, Bulahdelah Mountain was described by the Reverend H. M. R. Rupp as follows:

> After three months of uneventful relief work, I accepted charge of Bulahdelah on the Myall River, about seventy miles north of Newcastle. The village is scattered along the western base of one of the most remarkable hills in Australia, known as Alum Mountain. Barely 1,000 feet high, its bold cliffs and rock masses make it the dominant feature of the landscape for miles along the Myall Valley. I know of few more striking scenes than that which greets the traveller's eye when, climbing to the summit of the range that walls in this valley on the west, the road suddenly curves, and he finds himself looking over a sea of undulating tree tops to the strangely tinted Bullah Delah – 'the Great Rock' – on the far side of the valley. The colour scheme of the Alum Mountain is unique. The alunite rock of which it is composed, when newly fractured, is a delicate pink; but on the worn surfaces of the cliffs and natural monoliths of the upper half of the mountain, the pink has faded into different shades, and these blend with the white-and-brown of lichens and the green of mosses and matted rock-creepers till the general effect is undefinable. If you approach Bulahdelah in the late afternoon and are lucky enough to see a passing shower sweep across the Great Rock, you will never forget the opalescent sheen that suddenly gleams as the rays from the western sun strike the wet cliffs."[1]

[1] Reverend Herman Montague Rucker Rupp, quoted in Lionel Gilbert, *The Orchid Man – The Life, Work and Memoirs of the Rev. H. M. R. Rupp 1872 – 1956*, and the Great Lakes Council, *Great Lakes Council Heritage Study*, 2007, 4-5. Rev. Rupp served at Bulahdelah 1921-22.

The beauty of the opalescent sheen can be seen on pieces of alum found on the mountain. The white surface shines like a pearl with the muted sheen reminiscent of the inside of an abalone shell [See Figure 8].

Preceding the Reverend Rupp's observations of Bulahdelah Mountain in the early 1920s, the top 260 metres of Bulahdelah Mountain had been destroyed by mining blasts.[2] Explosives had been utilised to break up the ore once the areas with the best grades were identified.

> The alunite was then hand tooled into manageable pieces and packed into small horse drawn trolley carts. The stone was then taken to the factory at the foot of the mountain using the inclined tramway (on a 30 degree slope) where loaded carts were sent down the steep line whilst it pulled up an empty cart. The stone was then either exported to England via the Myall River or manufactured into alum in the factory at the foot of the mountain.
>
> The following process were involved:
>
> a) Crushing and heating in a kiln to dehydrate and drive off sulphur dioxide.
> b) Treated with weak sulphuric acid in lead lined tanks heated to boiling with steam jets.
> c) Allowed to settle in the same tank before the clear solution was run off into crystallising tanks.
> d) Cooling solution with constant agitation while alum crystallises out leaving sulphate of alumina in solution.
> e) Collecting, washing and refining, recrystallising, crushing and packaging.[3]

A description of the mountain from 1890 states:

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[2] Umwelt Bulahdelah Mountain, 4.14.
[3] R. Evans and B. England. "Alum Mountain Bulahdelah. Geo-Log 2015.", *Journal of the Amateur Geological Society of the Hunter Valley, Inc*., (September 19, 2015): 26. http://agshv.com/pdffiles/Geo-Logs/2015.pdf.

> In a show case there will be seen samples of alum stone and alum crystals, prepared at the Australian Alum Company's works, Bulahdelah. Prior to the discovery of alum stone in this locality, it was not known to occur in commercial quantity in the colony. It occurs as an immense deposit, forming the summit of a ridge, about three-quarters of a mile long, by half a mile wide, and rising about 1000ft above the level of Myall Creek, on which it is situated. It presents a massive outcrop, resembling limestone. It yields from 60 to 80 per cent of alum.[4]

Relevant historical literature informs that, prior to commercial mining destroying its summit, Bulahdelah Mountain appeared to be a huge white sparkling crystal.[5] In fact, the first non-Indigenous people to the area thought the summit of the mountain bore a resemblance to limestone.[6] This historical observation is interesting to note, as limestone is a rock mostly composed of calcite and aragonite; calcite being the mineral European observers believed the *Murruba Gibbers* crystals were likely manufactured from.[7]

The colonists began commercial mining of alum at Bulahdelah Mountain after its deposits first garnered the attention of the non-Indigenous people after a man named John Cassidy found high-grade alum in a burnt out stump on the mountain in 1876.[8] Prior to John Cassidy's find in Bulahdelah in 1876, non-Indigenous settlers had not known of any commercial quantity of alum within the colony.[9] John Cassidy sent a sample of alum to authorities in 1876. However, the location of Bulahdelah's substantial alum deposit remained

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[4] "The New South Wales Court". *Otago Witness* 6: 1986 (March 6, 1890): 19.
[5] Umwelt Bulahdelah Mountain; "The New South Wales Court". *Otago Witness*.
[6] "The New South Wales Court". *Otago Witness*.
[7] "The Murruba Gibbers of the Australian Aborigines", *The Maitland Weekly Mercury.* August 8, 1896, 11; Walter John Enright, "Two Sacred Crystals", *Science of Man and Journal of the Royal Anthropological Society of Australasia*, 9: 6 (June, 1907); 9: 9 (September 1907); 9: 10 (October 1907).
[8] Evans and England. "Alum Mountain Bulahdelah.".
[9] "The New South Wales Court". *Otago Witness*.

a mystery to most of the colonists until March 1887 when the *Bathurst Free Press and Mining Journal* broke the news of a discovery of alum at Bulahdelah. In part the article states

> Alumite has not hitherto been found in any part of the world, except in one or two localities in Europe. Alum is much used in dying, calico-printing, paper-making, as a mordant in colours, in medicine, and for a variety of purposes.[10]

Runcorn Alunite Company mined the mountain from 1878, exporting the ore to Runcorn, England.[11] Specimens of stone, believed to be limestone, were submitted to Messrs Cox and Seaver, which prompted them to visit Bulahdelah.[12] After Cox and Seaver's Bulahdelah visit, newspaper reports of 1887 state:

> A company was then privately floated, the proprietors holding two-thirds of the interest, and allowing some other Sydney gentlemen in as partners for a sum between £8,000 and £10,000 for the remaining one-third interest … Alunite has not hitherto been found in any part of the world, except in one or two localities in Europe[13]

In November 1888 the Australian Alum Company, in which both Cox and Seaver had an interest, obtained mining leases for Bulahdelah Mountain.[14]

The mining of the ore took place intermittently between 1878 and 1952 and to date, Bulahdelah Mountain remains the only Australian mine site where the commercial manufacture of alum was attempted on-site; this having occurred between the years 1890-

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[10] "Discovery of a Rare Mineral near Port Stephens", *The Kiama Independent and Shoalhaven Advertiser,* March 22, 1887, 4.
[11] Evans and England. "Alum Mountain Bulahdelah.".
[12] "Colonial News", *The Gundagai Times and Tumut, Adelong and Murrumbidgee District Advertiser*, April 5, 1887, 4.
[13] "Colonial News", 4.
[14] "Australian Alum Company", *Newcastle Morning Herald and Miner's Advocate*, May 13,1887, 3; "The Sydney Morning Herald, Advertising notice", *The Sydney Morning Herald.* February 20, 1889, 4; Evans and England. "Alum Mountain Bulahdelah."

1892.[15] 'The natural phenomenon that is the Alum Mountain is the only known alunite deposit of potassium bearing minerals in NSW'.[16]

In 1888 a Mr Samuel Cox, former Assistant-Geologist of New Zealand, sent a large piece of crystallised alum, weighing in at several pounds, to his former superior, Sir James Hector, Government Geologist for New Zealand, claiming he 'discovered' it, as reported in the Wellington Philosophical Society's (1888) minutes:

> Sir James Hector exhibited a specimen of Alumite from Australia, with the alum obtained from it. He explained that it had been discovered by J. H. Cox[17] late Assistant-Geologist.[18]

It was reported in New Zealand's *Daily Telegraph* on 17 November 1888 that Cox had

> ascertained that a mineral which is found in large quantities in certain parts of the sister colony, and which has been known as limestone as used for building purposes, is alumite, and can be converted into pure alum by heating it and afterwards pouring cold water upon it. A syndicate, of which Mr Cox is a member, has been formed to work the deposits, and it is said that pure alum can be produced much cheaper than the article has hitherto been obtainable at. A large lump of the alum manufactured by the process which the syndicate are using was brought over from Sydney by Sir James Hector a few days ago, and was shown at a meeting of the Philosophical Society last evening. The exhibit is several pounds weight, and its quality is first-class. We are

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[15] Evans and England. "Alum Mountain Bulahdelah. Geo-Log 2015", 26; Navin Officer Heritage Consultants, The Bulahdelah (Alum Mountain) Alunite Mine Site-Complex Report: A Cultural Heritage Assessment, with reference to the proposed Bulahdelah Pacific Highway upgrade route, option E, (2001); Great Lakes Council. *Great Lakes Heritage Study.* A community based study prepared by Great Lakes Council in partnership with the NSW Heritage Office. 2007.
[16] Evans and England. "Alum Mountain Bulahdelah. Geo-Log 2015", 26.
[17] Although the initials 'J. H." appear here, this is a typographical error, as the specimen was provided to Sir James Hector by Mr S. H. Cox.
[18] Wellington Philosophical Society. *Transactions and proceedings of the Royal Society of New Zealand* 21 (1888): 509. http://rsnz.natlib.govt.nz/image/rsnz_21/rsnz_21_00_0603_0509_ac_01.html

> informed that Mr Cox, who was until recently a lecturer in the Technical College, Sydney, estimates the value of his interest in the mine and works at several thousands of pounds.[19]

Less than a decade prior, Sir Hector had examined large, crystallised pieces of alum obtained from Aboriginal people and placed on display by Henry Moss at The Ethnological Court in Sydney.[20] At the time Hector viewed the Moss exhibits, Cox was working as Hector's assistant and, as an exciting geological find, this probably alerted Cox to the likelihood of a large alum deposit within New South Wales and set him upon a quest to profit from ascertaining the source of these crystallised pieces of medicinal alum, a quest which saw Cox relocate from New Zealand to New South Wales to undertake.[21]

The specimen that Cox had given to Hector was displayed in the mid-November of 1888[22] which was the same month that the Australian Alum Company (in which Cox had an interest[23]) took out mining leases over Bulahdelah Mountain.[24] Given that no processing equipment was in place at Bulahdelah to create such a large crystal until 1890, and the fact this crystal, weighing in at several pounds, would have taken time to manufacture and ship to Wellington New Zealand it is impossible that this crystal was manufactured by the Australian Alum Company prior to the date they obtained their mineral leases; and improbable the firm manufactured it at all.[25] We can make the logical assumption, given the process described

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[19] "Untitled", *Daily Telegraph* (New Zealand), Issue 5378 (November 17, 1888).
[20] "The Ethnological Court", *The Sydney Mail and New South Wales Advertiser*, November 15, 1879, 846.
[21] Taranaki Herald, *Taranaki Herald*, Volume XXII, Issue 2265, (1874): 2.
[22] Wellington Philosophical Society. *Transactions and proceedings of the Royal Society of New Zealand* 21 (1888), 509. http://rsnz.natlib.govt.nz/image/rsnz_21/rsnz_21_00_0603_0509_ac_01.html. "Untitled", *Hawke's Bay Herald*, Volume XXIII, Issue 8214 (November 19, 1888): 2.
[23] Samuel Herbert Cox is listed as having been a director of The Australian Alum Company in a newspaper notice featured in *The Sydney Morning Herald*, February 20, 1889, 4.
[24] Evans and England. "Alum Mountain Bulahdelah", 26; "Untitled", *Hawke's Bay Herald* 23: 8214 (November 19, 1888), 2.
[25] Navin Officer Heritage Consultants, The Bulahdelah (Alum Mountain) Alunite Mine Site-Complex Report; Great Lakes Council. *Great Lakes Heritage Study*.

above to obtain crystallised alum by the colonisers and their lack of any infrastructure to complete this task prior to 1890, that this large piece of crystallised alum was manufactured at Bulahdelah by the Worimi, and obtained by Cox during his visit to Bulahdelah in 1887.[26]

> A showcase, reported in newspapers in March 1890, displayed alum stone and alum crystals which had been processed at the Australian Alum Company's site at Bulahdelah.[27] Alunite mining took place on the mount from 1878 until 1927, and again during the years 1934 to 1950 until the mine closed in 1952 having had a maximum annual production of 3,644 tons.[28]

The manufacture of alum on-site at Bulahdelah did not progress past 1892, and the higher-grade ore was exported overseas to be processed.[29] Due to the extensive building works required, it appears the Australian Alum Company were not able to process and manufacture crystallised alum on-site at Bulahdelah until 1890; the building works having only begun after the firm obtained their lease in 1888.[30]

Aboriginal Community Consultation – Bulahdelah Mountain's Cultural Significance

Investigations into Bulahdelah Mountain's significance to the local Aboriginal community were undertaken for the NSW National Parks and Wildlife Service's *The Umwelt Report* of 2003, and the Navin Officer Heritage Consultants' report, *Navin Officer Report* of 2000. During their investigations, the Navin Officer Report (2000) recorded accounts from Aboriginal people with passed-on or direct knowledge of Bulahdelah Mountain and the

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[26] "Colonial News", *The Gundagai Times and Tumut, Adelong and Murrumbidgee District Advertiser*, April 5, 1887, 4.
[27] "The New South Wales Court". *Otago Witness*.
[28] Evans and England. "Alum Mountain Bulahdelah.".
[29] Evans and England. "Alum Mountain Bulahdelah," 26. Navin Officer Heritage Consultants, The Bulahdelah (Alum Mountain) Alunite Mine Site-Complex Report; Great Lakes Council. *Great Lakes Heritage Study*.
[30] "The New South Wales Court". *Otago Witness*.

surrounding area, while the Umwelt Environmental Consultants' interviewed eleven Aboriginal community members and Aboriginal NPWS officers and conducted a further three interviews with non-Aboriginal members of the community who were well informed regarding the mountain's historical significance to both the local Aboriginal and non-Indigenous population.

The local Aboriginal community identified important facets of the traditional and cultural significance of Bulahdelah Mountain and affirmed Bulahdelah Mountain has always been a special, sacred and spiritual place for Aboriginal people[31]. Community consultation provided valuable information, including that Bulahdelah Mountain's summit was traditionally significant as an area of men's business[32] then later used for women's business[33] and that there was once a sacred waterhole at the high point of the mountain[34], which was likely damaged when the top 260 metres of the mountain was destroyed by mining blasts[35]. The summit was used by the Worimi as a communications point and a lookout.[36]

Community interview informed that there was a sacred or Guardian Tree in the area, which the Umwelt consultants also identified in their archaeological evidence. The presence of the sacred guardian tree at the base of the mountain is believed to show that it's an area of women's business.[37]

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[31] Navin Officer Heritage Consultants, Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study: Indigenous Cultural Heritage Component. Sydney: PKK Environment and Infrastructure Pty Ltd for the NSW Roads and Traffic Authority, 2000; Umwelt. Bulahdelah Mountain.
[32] Navin Officer Heritage Consultants, Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study; Umwelt. Bulahdelah Mountain.
[33] Umwelt. Bulahdelah Mountain.
[34] Umwelt. Bulahdelah Mountain.
[35] Umwelt. Bulahdelah Mountain.
[36] Umwelt. Bulahdelah Mountain.
[37] Great Lakes Council. Great Lakes Heritage Study, 9.

The Aboriginal trade in alum from Bulahdelah Mountain

Bulahdelah Mountain was a cultural landmark for the migration of different *nurras*, as groups travelled inland from the coast;[38] and a significant ceremonial site,[39] which included regular corroborees[40] which the Elders of the Karuah Local Aboriginal Land Council believe Biripai people may have attended.[41] Bulahdelah Mountain was likely a place of trade for the medicines manufactured there. Alum was in the possession of tribes from varied geographical locations, having been observed on NSW's mid-North Coast[42], Central Coast,[43] and found in the Shoalhaven district[44] and was used for other applications, including having been used by Aboriginal people in South Australia for tanning hide pelts.[45]

Among the Aboriginal artefacts collected on the NSW South Coast in the late 1800's was

> a splendid sample of native alum in large crystallised pieces[46]

showing that alum was traded by the Worimi, who would have crystallized it for the purpose.

Alum may not have been the only trade item produced on Bulahdelah Mountain. Obsidian is another prized stone found on the mount. An ideal natural glass, obsidian is razor sharp and

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[38] NSW Environment, Energy and Science. Bulahdelah Mountain. Sydney: NSW Environment, Energy and Science, Heritage Office, 2015. https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=50628.
[39] Great Lakes Council. Great Lakes Heritage Study; NSW Environment, Energy and Science. Bulahdelah Mountain.; Umwelt. Bulahdelah Mountain; Navin Officer Heritage Consultants, Proposed Pacific Highway Bulahdelah Upgrade Route Selection Study.
[40] "History of Bulahdelah", *Dungog Chronicle: Durham and Gloucester Advertiser*, November 15, 1950, 1.
[41] "Aboriginal people of this region", Signage at the base of Bulahdelah Mountain. Erected c.2012 with input from Karuah LALC, 2012.
[42] Umwelt. Bulahdelah Mountain.
[43] "Aboriginal people of this region", Signage at the base of Bulahdelah Mountain. Erected c.2012 with input from Karuah LALC, (2012).
[44] "The International Exhibition", *The Sydney Morning Herald*, November 21, 1861, 8; M. K. Organ, "Illawarra South Coast Aborigines 1770-1900." Report to the Australian Institute of Aboriginal and Torres Strait Islander Affairs, Canberra. Vol.2. 1993.
[45] W. Rogers, "A Noted Blackfellow". *The Register*, June 4, 1924, 11.
[46] M. K. Organ, "Illawarra South Coast Aborigines 1770-1900." Report to the Australian Institute of Aboriginal and Torres Strait Islander Affairs, Canberra. Vol.2. 1993, 154.

was used by Aboriginal people of Bulahdelah Mountain as a skinning tool.[47] Both alum and obsidian would have lent themselves to the manufacture of items such as possum skin cloaks; another valuable line of potential trade.[48]

Although the dispossession and destruction of Bulahdelah Mountain's peak by the colonists ruled out the continued trade in alum by the Worimi in the late 1800s, the Aboriginal trade in traditional medicinal items continued throughout the early 1920s. An Aboriginal man named, "Dingo Jimmy", who was both a messenger and a linguist, carried messages from tribe to tribe in his traditional role as an ambassador, messenger and delegate. He traded in traditional medicines, bartering with red and yellow ochre, gypsum, salt and pituri among other items. "Dingo Jimmy" also traded Bancrofts Eye Plant[49], from which duboisine was extracted, considered superior to atrophine and used for dilating pupils and surgical purposes.[50]

Prior to John Cassidy's find in Bulahdelah in 1876, non-Indigenous settlers had not known of any commercial quantity of alum within the colony.[51] Several pieces of large, crystallised alum were part of the ethnological collection of a prominent resident of NSW's South Coast.[52] These sacred objects were exhibited at the International Exhibitions in 1862 and

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[47] "Aboriginal people of this region", Signage at the base of Bulahdelah Mountain. Erected c.2012 with input from Karuah LALC, 2012.
[48] Rogers, "A Noted Blackfellow". *The Register*, June 4, 1924, 11; "Aboriginal people of this region", Signage at the base of Bulahdelah Mountain. Erected c.2012 with input from Karuah LALC, 2012.
[49] Dr Joseph Bancroft's Eye Plant, or *Duboisia myoporides*, otherwise known as scrub pituri was cultivated by Dr Bancroft and the extract duboisine was believed to be superior to atropine for dilating pupils. Aboriginal people used the plant as an intoxicant and to stupefy fish for ease of capture. "Kooragai", *Bulletin*, 54: 2794 (August 30, 1933), 21. https://nla.gov.au/nla.obj-607099441/view?sectionId=nla.obj-610923042&partId=nla.obj-607165730#page/n19/mode/1up
[50] E. S. Sorenson, "Visiting Blacks", *The Australasian*, November 24, 1923, 50.
[51] "The New South Wales Court". *Otago Witness*.
[52] A proactive member of the Shoalhaven community, Henry Moss was the first Mayor of Nowra for many years and remained an alderman for the Municipal Council up until his death in 1887 (see "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2; The Late Mr Henry Moss, *The Kiama Independent, and Shoalhaven Advertiser,* September 23, 1887, 2; Death of Mrs Moss, *The Nowra Leader,* October 26, 1928, 3).

1881; at the Ethnological Court in 1879; and later at Sydney's Garden Palace.[53] This important ethnological collection was described by a newspaper of the period as a

> most interesting and valuable collection of exhibits, representing the primitive life of the [A]borigines of this district[54].

Bulahdelah now recognised as an Aboriginal place, although its history as a healing site is not widely known outside of local Aboriginal people.

[53] "The International Exhibition", *The Sydney Morning Herald*, November 21, 1861, 8; "The Ethnological Court", *The Sydney Mail and New South Wales Advertiser*, November 15, 1879, 846.; "Shoalhaven at the International Exhibition", *The Telegraph and Shoalhaven Advertiser,* May 5, 1881, 2.
[54] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*. 1879, October 30, 2.

Chapter 7

Worimi manufactured crystallised alum - evidence of trade

"It's a long road we have come and it's a long road we can go.

We have to walk together and talk together.

If you never listen to me, I will never listen to you.

I will not follow you. Walk side by side and let's get there."

Conrad Ratara

Alum crystals manufactured at the source in Bulahdelah by the Worimi people were traded to Aboriginal people of the Shoalhaven district. These large pieces of crystallised alum were documented in the 1800s to have been in the possession of the Shoalhaven's Aboriginal people and, towards the end of the nineteenth century, became part of a grouping of ethnological objects displayed at the Ethnological Court alerting many of the colonial authorities to the Aboriginal use of alum. This chapter discusses the role played by remarkable colonist Henry Moss and his wife Sarah Moss in the history of Bulahdelah Mountain and, although this was a role that they were probably unaware of at the time, their

work in curating significant ethnological items has left an important legacy for Australian historians and ethnologists.

Henry Moss

In the early 1860s on the New South Wales south coast, Henry Moss acquired several sizeable, crystallised specimens of alum that became part of his impressive ethnological collection of Aboriginal artefacts. There was likely a harsh punishment under cultural lore for a non-initiated person taking possession of these sacred crystal stones. However, Moss and his wife enjoyed a very good relationship with the local Aboriginal people and obtained cultural knowledge and cultural objects through this long-standing reciprocal friendship. To truly understand how and why it was that Moss came into possession of several large sacrosanct Aboriginal healing crystals, we must examine who Moss was alongside the days of dispossession and cultural transition in which he lived.

During the nineteenth century, Henry Moss was one of the Shoalhaven district's most prominent men. Moss was elected Mayor of Shoalhaven in 1861, and in 1872 was voted the first mayor of Nowra.[1] Moss's dual passions of ethnology and geology make him a fascinating historical subject and may have aided in his acquisition of these sacred items.[2]

Henry Moss's ethnological collection was a valuable, wide-ranging and notable assemblage of important cultural items relating to the traditional lives of Aboriginal people. Moss's

[1] Henry Moss was Mayor of Nowra in the years 1872, 1874-76, 1883 and 1885-86. See "Thirty Years Ago", *The Shoalhaven Telegraph*, June 15, 1932, 6.
[2] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser,* October 30, 1879, 2; "Obituary", *The Shoalhaven Telegraph*, September 21,1887, 2; "The Late Mrs. S. Z. Moss of Nowra", *The Hebrew Standard of Australasia,* November 9, 1928, 10; "Mayor of Shoalhaven", *Goulburn Herald*, June 5, 1861, 4; "Shoalhaven", *Empire*, February 22, 1872, 2.

inclusion of large alum crystals in his ethnological collection speaks to both their manufacture, and use, by Aboriginal people.[3]

Colonial authorities were cognisant of Henry Moss's acquisition of these large, crystallised alum specimens. Moss's specimens were put on display at local and international exhibitions from the early 1860s to 1880. Moss's sizeable alum crystals featured in an exhibit in the Ethnological Court at the 1879-80 Sydney International Exhibition at the Garden Palace. In 1880 the Technological, Industrial and Sanitary Museum, later known as the Powerhouse Museum, was founded as a branch of the Australian Museum. The ethnological items displayed at the Ethnological Court, including these large pieces of crystallised alum manufactured by the Worimi, remained within the Garden Palace after the Sydney International Exhibition closed in 1880. These artefacts were earmarked to become the new museum's foundation collection for its ethnological gallery.[4]

Henry Moss's many geological finds, rather than forming part of a personal geological collection, were swiftly forwarded to colonial experts and authorities. Physical specimens of geological interest secured by Moss were promptly dispatched to Moss's close friend, the Reverend William Branwhite Clarke. Clarke, regarded as the Father of Australian Geology,[5] publicly acknowledged Moss's considerable contributions to the cause of science and commended Moss's geological survey of the Shoalhaven district.[6]

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[3] "Shoalhaven at the Garden Palace*",* 2.
[4] Australian Museum, *"Our history: Two Museums and a Garden Palace",* https://australian.museum/about/history/two-museums-and-a-garden-palace/, created 2018, last updated April 1, 2021.
[5] R. W. Young. "Reverend W. B. Clarke, 'the Father of Australian Geology', on the origin of Valleys", *Australian Journal of Earth Sciences*, 54: 1 (2007): 127-134.
[6] "Obituary". *The Shoalhaven Telegraph,* September 21, 1887, 2; A. Clark. "Henry Moss: He Had A Vision For Nowra", *Australian Jewish Historical Society Journal* 11: 4 (1992): 643-649.

Notably, Henry Moss's large specimens of crystallised alum were not logged as part of his geological finds, nor sent on to colonial experts and authorities as geological specimens. Neither did these large crystals form part of his personal geological collection. These important sacred objects, manufactured and used medicinally by Aboriginal people, became a significant inclusion in Moss's ethnological collection and were shared with colonial authorities as ethnological items.

'The General': (1 June 1831 - 18 September 1887)

Henry Moss was born Henry Moses on 1 June 1831 on Gadigal land in colonial Sydney.[7] Moss was the son of emancipated convict and hotelier, Jacob Moses, and his Irish-born wife, Mary Connolly. Mary assumed the name 'Rebecca' after becoming the first gentile woman in Australia to convert to Judaism. Moss's parents were the first couple married in a traditional Jewish wedding ceremony in Australia. Their traditional marriage document - or *ketuvah* - was written in Aramaic and is still in existence.[8] Jacob, the son of a London Rabbi Joseph Moses,[9] took the name 'John' after the marriage.[10]

In 1844, the Moses family settled in Yass, a small town situated 280 kilometres south-west of Sydney on Ngunawal Country. Two of Henry's uncles, Moses Moses and Isaac Moses, were already residing in the locality, each having established their own hotels in Yass.[11] Yass' name is possibly derived from the Ngunawal word for running water (*Yarrh* or *Yharr*) as the

[7] J. S. Levi. *These Are The Names: Jewish Lives in Australia: 1788-1850*. Melbourne: Melbourne University Publishing, 2013, lists Henry Moses (aka Henry Moss) as having been born in 1828, however all other records list 1 June 1831 as his birthdate, see NSW Marriage Certificate, 25.12.1862, reference 3007/1862.
[8] A. Clark. "Henry Moss: He Had A Vision For Nowra", 643-649.
[9] M. Rowan. *Moses Moses*, NSW Death Registration Transcription, NSW Births, Deaths and Marriages, transcription.com.au, 14 June 2013, Ref: 1808636.
[10] Levi, *These Are The Names*; Clark, "Henry Moss"; M. Rowan. *Moses Moses,* NSW Death Registration Transcription, NSW Births, Deaths and Marriages, transcription.com.au, 14 June 2013, Ref: 1808636.
[11] A. Clark. "Henry Moss: He Had A Vision For Nowra", 643-649.

Yass River, a tributary of the Murrumbidgee River,[12] flows near to the town. Only months after arriving in Yass, Henry Moss suffered the loss of his two sisters, Sarah and Hannah, who were both drowned at a flooded river crossing.[13] As a youth, Moss likely witnessed the Ngunawal people keeping to their normal traditional seasonal movements. There are several accounts of traditional cultural ceremonies occurring in Yass even throughout the 1860s.[14]

Witnessing the raw reality of slavery in Australia

In October 1847 an event took place in Yass that left its mark on the young Henry Moss. A group of men and boys, referred to as 'Boyd's Blacks', from Lifu Island[15] and New Hebrides[16] travelled through Yass on their way to Sydney. This group of South Sea Islanders had arrived in Australia enslaved to Benjamin Boyd.[17] Born in Scotland in 1801, Benjamin Boyd was a banker, politician, grazier, shipowner, entrepreneur and slaver.[18] The South Sea Islanders arrival in Boydtown in 1847 was the beginnings of a cruel 40-year trade in indentured labour, which came to be known as 'blackbirding'. Boyd notoriously exploited South Sea Islander labour within the Colony of New South Wales. At the time of the arrival of Boyd's first shipload of 65 South Sea Islanders the local bench magistrates noted none of these 65 young men and boys spoke any English and that all were naked.[19] Boyd was already

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[12] The second longest river in Australia, 'Murrumbidgee' means 'big water' in the Wiradjuri language: see https://www.britannica.com/place/Murrumbidgee-River
[13] While Clark records the loss of Henry's mother only three months later, Levi states she died a decade later in 1854, a fact confirmed by Mary (Rebecca) Moses' death notice, see "Family Notices", *The Sydney Morning Herald,* January 14, 1854, 5; "News from the Interior", *The Sydney Morning Herald,* March 31, 1848, 3; Buru Ngunawal Aboriginal Corporation, History, https://www.buru-ngunawal.com/426484390.
[14] See Buru Ngunawal Aboriginal Corporation, History: https://www.buru-ngunawal.com/426484390.html
[15] now known as New Caledonia.
[16] now known as Vanuatu.
[17] "Yass", *The Sydney Morning Herald*, October 27, 1847, 3. "'Shipping Intelligence.' From *The Sydney Morning Herald*. 'Yass'." *The Maitland Mercury and Hunter River General Advertiser*, October 30, 1847, 2-3.
[18] G. P. Walsh, *Australian Dictionary of Biography*, "Boyd, Benjamin (1801-1851)", *Australian Dictionary of Biography,* Vol.1, 1966, https://adb.anu.edu.au/biography/boyd-benjamin-ben-1815.
[19] M. Diamond. *The Seahorse and the Wanderer: Ben Boyd in Australia*, Melbourne: Melbourne University Press, 1988.

using both Maori and Aboriginal labourers in his whaling and pastoral endeavours. Rather than acknowledge his use of slave labour, Boyd positioned himself as one utilising an 'imported' labour force.

> The language of 'importation' rather than immigration, as adopted by Boyd, framed the commodification and proprietorship of employment and the reductive placement of Islanders' bodies and extracted labour in a language of economic units ... By contrast the use of Indigenous people's labour, though widespread and normalised, would remain hidden and ignored, indicative as it was of the dependence of settlers on Indigenous knowledge, skills, and labour even as they pursued colonial fantasies of empty landscapes converted by Anglo-Saxon industry into 'productive property'.[20]

In August 1847, concerns were expressed in parliamentary debate about what was described as 'an incipient slave trade'.[21]

> The New South Wales Government refused to create a legal mechanism for the use of indentured labour generally and from the Pacific Islands specifically, amending the *Masters and Servants Act 1847* to include Section 15:
>
> > 'Nothing in this or the said recited Act contained shall be deemed or construed to apply to any native of any savage or uncivilized tribe inhabiting any Island or Country in the Pacific Ocean or elsewhere'.[22]

The second shipload of New Hebridians arrived in Twofold Bay on 17 October 1847.

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[20] Tracey Banivanua-Mar, "Boyd's Blacks: Labour and the Making of Settler Lands in Australia and the Pacific", in Victoria Stead and Jon Altman, eds., *Labour Lines and Colonial Power: Indigenous and Pacific Islander Labour Mobility in Australia,* Canberra: ANU Press, 2019, 57-74.
[21] Banivanua-Mar, "Boyd's Blacks", 64.
[22] *Masters and Servants Act 1847* (NSW) No.9a. No. IX, 16 August 1847, 'An Act to Amend an Act Intitled "An Act to Amend and Consolidate the Laws between Masters and Servants in New South Wales"', as quoted in Banivanua-Mar, "Boyd's Blacks", 65.

> Boyd refused responsibility for them, as the contract they had signed in the New Hebrides had been rendered null and void by the *Masters and Servants Act*. Boyd would go on to blame the New South Wales Government for the failure of his labour experiment… At the same time, workers from the first shipment left Boyd's stations and intelligence had them in Yass around 25 October on the way to see the governor and 'Missa Boyd'. The press took great delight in speculating about whether they were going to eat them both.[23]

These events led to the group of 'Boyd's Blacks' arrival in Yass in October 1847, which must have proven a shocking and confronting sight for the teenaged Henry Moss. After their stay in the small township, Yass' local newspaper correspondent referred to Benjamin Boyd as the group's 'owner' in a report appearing in the *Sydney Chronicle*, stating, 'everyone is of the opinion that the Legislature ought to interfere, and perhaps the arrival in Sydney of those who passed through this place the other day, may have the desired effect'.[24] The group were almost nude and shivering with cold, dependent on any supplies they were able to obtain, with some barely able to walk. One witness stated, 'it is to be hoped that the present failure of what was conceived by some to be an excellent expedient, will deter others from entering into this barbarian scheme'.[25] However, despite Boyd's labour experiment being deemed a failure, the trade in indentured labour in Australia would continue for decades.

Henry Moss, as a first-generation Australian Jewish man, having witnessed this enslaved group passing through town was undoubtedly greatly impacted at his young age of just sixteen years. This event without doubt stirred within Moss feelings of both empathy and

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[23] Banivanua-Mar, "Boyd's Blacks," 65.
[24] "Domestic Intelligence", *Sydney Chronicle*, October 28, 1847, 2.
[25] "Domestic Intelligence", 1847, 2.

shame. Even as a youth, Moss understood that the bondage, mistreatment, and ignominy these men suffered had tarnished Australia with the shame of slavery. As part of his Jewish faith, Moss celebrated Passover - or *Pesach* - each year with his family. On the first day of Passover, Jewish parents are obligated to tell their children of the Jewish exodus from Egypt, the nation that had enslaved the Jews for generations.[26] Moss's Jewish heritage served to reinforce the confronting realities of the subjugated group's brutal circumstance. This event certainly stayed with Moss over the following years, as evidenced in his writings. His deep compassion for the inequity of Aboriginal people and for those who had been brought to this land from the Pacific Islands was evidenced in his actions throughout his lifetime.

For the locals of Yass, 'Boyd's Blacks' sojourn in the town after leaving Boyd's stations was a disturbing episode. There was evidence the newly arrived men were assaulted savagely by local stockmen. We can assume obvious physical marks of this mistreatment were evident on their nude bodies during their time in Yass. Those of this group who made it to Sydney found that they were stranded and took work on boats and around the harbour.[27]

From Yass to the Shoalhaven (1851 – 1887)

Henry Moss's relocation to the Shoalhaven area was pre-empted by an 1848 arson attack involving the stables and a haystack at his father's inn. Moss was accused of conspiring with another boy to implicate a business rival of John Moses in the crime. The teenaged Moss was

[27] Banivanua-Mar, "Boyd's Blacks".

eventually found guilty, not of arson, but of subornation of perjury[28] due, it was claimed, Alley, to the atrocious bungling of his defence by his barrister.[29]

Having secured his Ticket of Leave in 1851, Henry Moss left Yass for the Shoalhaven district[30] a move that placed him, in location and time, in the position to record the important sacred objects manufactured by the Worimi in what would become the final years of their trade in these items. Moss's Ticket of Leave describes him as five feet six inches tall, with grey eyes, a ruddy complexion, brown hair, a scarred right-hand and a dimple in his chin[31] and directs that he was 'Allowed to remain in the District of Wollongong Bench'.[32] When Moss arrived in the area, Terara was the Shoalhaven's main business district, however it was Moss that foresaw Nowra's raw potential.

Henry Moses begins life as Henry Moss

Upon his arrival in the district Henry Moss chose to drop the 'e' from his surname, Moses, and be known as Henry Moss.[33] Some have speculated Moss's name change may be an indication he wanted to make a fresh start after his release from incarceration for subordination of perjury.[34] However, it is my opinion that there is no indication that Moss

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[28] Subornation of perjury is a criminal offence relating to procuring, persuading or otherwise inducing another person to lie under oath.
[29] Clark, "Henry Moss"; "Untitled. Wednesday, September 6, 1848", *The Goulburn Herald and County of Argyle Advertiser,* September 6, 1848, 3; B. J. Bridges, Aspects of the career of Alexander Berry, 1781 – 1873, Unpublished PhD diss., Department of History and Politics, University of Wollongong Thesis Collection, University of Wollongong, 1992. http://ro.uow.edu.au/theses/1432; G. U. Alley, "Moss v. Devlin and Another (To the Editor of the 'Illawarra Mercury')", *Illawarra Mercury,* June 11, 1861, 2.
[30] "News from the Interior," *Sydney Morning Herald*, March 31, 1848, 3.
[31] State Records Authority of NSW, New South Wales Australia, Tickets of Leave (1810-1869), Butts of colonial tickets of leave, 1849-1875 (NRS 12207), Henry Moses, 4 July 1851, 339 of 825.
[32] State Records Authority of NSW, New South Wales Australia, Tickets of Leave (1810-1869), Butts of colonial tickets of leave, 1849-1875 (NRS 12207), Henry Moses, 4 July 1851, 339 of 825.
[33] Hyam would state in 1869 that he had never known Moss by the name of Moses, only by the surname 'Moss', see "Central Criminal Court. Sydney, Nov.17. Regina v. Andrews – Perjury", *The Kiama Independent and Shoalhaven Advertiser*, November 25, 1869, 3.
[34] Clark, "Henry Moss".

changed his name to distance himself from his past conviction. Moss made no secret in the district regarding his prior conviction.[35] Moss is an anglicised version of Moses, therefore it would be reasonable to conclude the name change may have been to avoid acts of anti-Semitism.[36] If this was Moss's intention, unfortunately he did not escape being victimised for his faith. Several influential Shoalhaven colonists heavily persecuted Moss due to their anti-Semitism. This discrimination likely added to Moss's empathy for other victims of unjust persecution, oppression, prejudice, and harassment, like Aboriginal people.

In 1853 Henry Moss secured his Free Pardon and this same year his sister Deborah Moses married Moss's friend, widower Michael Hyam.[37] Michael Hyam, a publican, provided Moss with employment during his first years in the area. Together, Moss and Hyam advocated for Nowra's progress and began the first attempts at establishing local government. At this time, the colonial homesteads of the Shoalhaven district usually consisted of a cottage with a pretty garden and a few roughly constructed outbuildings, generally roofed with split cabbage-tree logs. Commonly, situated only a few feet from the main cottage, would be a cluster of Aboriginal bark-covered dwellings, conical in shape, housing the Aboriginal families that had left traditional life to work as labourers.[38]

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[35] "Mayor of Shoalhaven", *Goulburn Herald,* June 5, 1861, 4.
[36] "The Turf", *Bell's Life in Sydney and Sporting Reviewer*, February 12, 1859, 2; Clark, "Henry Moss"; M. Salmon, "Historic Towns of N. S. Wales." *Sunday Times,* 1908, 7; "Mayor of Shoalhaven", *Goulburn Herald,* June 5, 1861, 4; Levi, *These Are The Names*; "Shoalhaven in 1888", *The Shoalhaven Telegraph*, January 26, 1888, 2; Registration Number 113/1853 V1853113135, NSW Government Registry of Births, Deaths and Marriages; State Records Authority of NSW, New South Wales Australia, Tickets of Leave (1810-1869), Butts of colonial tickets of leave, 1849-1875 (NRS 12207), Henry Moses, 4 July 1851, 339 of 825.
[37] Registration Number 113/1853 V1853113135, NSW Government Registry of Births, Deaths and Marriages; Levi, *These Are The Names,* states Michael Hyam was Deborah Moses (and therefore also Henry Moses') uncle. Levi (2013) however has listed Henry Moses/Moss's birth year incorrectly (1828 not 1831) and refers to him as 'Harry Moses'. Clark, "Henry Moss" refers to Michael Hyam as Henry Moss's 'friend', however Clark's facts are not always accurate. Clark lists Rebecca Moses, aka Mary Moses, as having died three months after her daughters who passed away in November 1844, whereas Levi correctly states Rebecca/Mary Moses's death occurred in January 1854, not January 1844, which is confirmed by Family Notices in newspapers of the day. Further, Clark's description of Henry Moses's (Moss) physical appearance was a description of another prisoner.
[38] "The Blacks of Shoalhaven, Part III", *The Sydney Morning Herald*, December 20, 1871, 7.

When Henry Moss arrived in the Shoalhaven district, the head of the Worrigee was a powerful and strong square-built man named Peter. Peter was known as the leader of the Shoalhaven Aboriginals, as Aboriginal people of both Jervis Bay and Burrier also followed him. Generally, Peter's community group occupied the southern side of the Shoalhaven River.[39] Considered a ferocious warrior,[40] Peter was also well versed in the use of a gun. Peter was such an excellent shot that he would cater wild fowl for the settlement's families, both Aboriginal and non-Indigenous. At one time Peter commanded around 150 men and his rule over them was an iron one.[41] However, upon Peter's death, Peter's son Jillicumber was unsuccessful in preserving community unity which resulted in a further breakdown in traditional life for the district's Aboriginal people.[42]

In the early days of the colonial presence in the Shoalhaven, there were those in the Aboriginal community who could still remember seeing French ships sitting off the Shoalhaven River's mouth, and many bore the marks of the destruction smallpox had wrought on this continent's First Inhabitants.[43] Many community members also recalled the massacre of four Aboriginal people that occurred about two decades before Peter's demise in the 1850s. Those involved in the massacre went unpunished, despite a witness and an arrest. Overseer Joseph Berryman had led a shooting party that had

> shot and killed two men, a young pregnant woman and an older woman known as Mene Mene in retaliation for spearing three cows and a working bullock. A witness to part of the incident, Hugh Thompson, reported the events to the authorities in

[39] "The Blacks of Shoalhaven, Part III", 7.
[40] "The Blacks of Shoalhaven, Part III", 7.
[41] "The Tourist, The Blacks of Shoalhaven", *The Sydney Mail and New South Wales Advertiser,* January 6, 1872, 10, 11.
[42] "The Tourist, The Blacks of Shoalhaven", 11.
[43] "The Fitzoy Waterfalls", *Australian Town and Country Journal,* January 2, 1871, 26.

> Wollongong; who arrested Berryman. Later, officially questioning Thompson's state of mind and evidence, they released him without trial. This lack of action endorsed the prevailing attitude that the land was there for the benefit of white settlers and Aboriginal people must not stand in their way.[44]

After Peter's death, Jullicumber failed to become the leader his father had been. Sadly, cultural ceremonies and corroborees would occur only occasionally under Jillicumber's leadership, and traditional life for the Shoalhaven Aboriginal people began to break down. Soon, Aboriginal families were forsaking traditional life and cultural practices and leaving camp to work for non-Indigenous families in the district to receive rum and rations. At this time, regular cultural practices were no longer being strictly observed and alcohol consumption increased which saw an overall increase in violence.[45] Henry Moss encountered traditional Aboriginal community life buckling under the pressures of dispossession and colonisation. Possibly the stark realisation that he was witnessing a culture in rapid transition inspired him to preserve and record what he could of Aboriginal traditional culture and practices. Moss was inspired to use his position and influence to aid the south coast Aboriginal people, and he did so over the following decades by using his political sway, intelligence, abilities and his station.

Much can be gleaned about Henry Moss's character from his own writings. Moss's poems were described as offering 'a glimpse of an earnest, sometimes radical, civil-minded regional voice, writing as an Australian decades before Federation and speaking in the familiar,

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[44] B. Cruse, L. Stewart, and S. Norman. *Mutton Fish: The surviving culture of Aboriginal people and abalone on the south coast of New South Wales*, Canberra: Aboriginal Studies Press, 2014, 23. M. Organ, "Illawarra and South Coast Aborigines 1770 – 1850", *Aboriginal Education Unit*, University of Wollongong, 1990.
[45] "The Tourist, The Blacks of Shoalhaven", 11. "The Blacks of Shoalhaven, Part III", 7.

decorous, moralising and pietist cadences of mid-Victorian Britain and colonial Australia'.[46] Inspired to record his thoughts in prose after his first few years on the Shoalhaven, in 1855 a 24-year-old Moss composed "Musings On The Shoalhaven" a poem beginning:

> My native land. Australia, in long years,
>
> When the dark cloud of slavery that o'erhung
>
> Thee, long has passed and Freedom's standard rears
>
> Her spotless banner, to the breeze outflung.
>
> Mayhap some worthier bard in loftier strain,
>
> Will sing thy need of praise my skill cannot attain.
>
>
> Oft at the silent hon'r of stilly night
>
> When the pale moon unfurls her silvery sail;
>
> And wings thro' snowy clouds on pinions bright
>
> Her trackless path, methinks I hear the tale,
>
> Of future years of glory, which will be,
>
> Thy happy lot, tho' dark thy cradled destiny…[47]

At 24 years of age, Henry Moss had witnessed the gross mistreatment of indentured labourers and the efforts of colonists to subjugate, acculturate and eradicate Aboriginal people. Many Aboriginal people in the district were working in servitude to the colonists in exchange for inexpensive commodities. Moss clearly considered Australia to be dishonoured by these

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[46] D. Gilbey, "GILBEY on three poetry collections: Henry Moss, Australian Women Poets of WWI; Elza de Locre" (eds Ellen Smith and Joseph Cummins), *Journal of the Association for the Study of Australian Literature,* Reviews 21.1, 2021.
[47] H. Moss, "Musings on the Shoalhaven", *The People's Advocate and New South Wales Vindicator,* February 3, 1855, 8.

forms of slavery. Moss's verse expresses his hopes for a future where all Australians would know freedom.

Henry Moss used the pen to express his views on Australian society and culture as he saw it. Moss thoroughly enjoyed writing poetry, a talent that ran in his family. Moss's half-brother Jack Moses (1861-1945), penned, 'Nine Miles from Gundagai', the inspiration for the famous statue of 'The Dog on the Tucker Box'[48] found on the road outside of Gundagai.[49] Aside from poetry, Moss was a correspondent for various newspapers and wrote letters to both newspaper editors and colonial authorities earnestly seeking to benefit his community.

By 1859, Henry Moss had left Michael Hyam's employ. A storekeeper, Moss ran his own business for several years before, like his father, uncles and brother-in-law, he too became a publican. Having established his hotel, Moss's determination to enforce the closure of the hotel on both the Jewish and the Christian Sabbaths allowed him to indulge his interest in geology by undertaking various prospecting activities on these days.[50] Around 1859 or 1860, Moss was the first discoverer of lode tin in New South Wales. Rev. W. B. Clarke had predicted it's eventual find in New South Wales given geological indications of its presence.[51]

About this same time, toward the end of 1859, a farmer witnessed a local Aboriginal man named Roger[52] kill his second wife. This killing came about a year after Roger had murdered

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[48] The iconic Australian statue is the work of F. P. Rusconi.
[49] Jack Moses, a close friend of Henry Lawson, was also a prominent presence at agricultural shows. See M. Rutledge, "Moses, John (Jack) (1861-1945)", *Australian Dictionary of Biography*, Supplementary Volume, Melbourne: Melbourne University Press, 2005). https:www.adb.anu.edu.au/biography/moses-john-jack-13114.
[50] "Obituary", *The Shoalhaven Telegraph,* September 21, 1887, 2; Moss's NSW Marriage Certificate, 25.12.1862, reference 3007/1862; "Mayor of Shoalhaven", *Goulburn Herald,* June 5, 1861, 4.
[51] "Government House Again", *The Sydney Morning Herald*, September, 19, 1912, 3.
[52] Likely the same Aboriginal man named Roger that Henry Moss worked with in later years to secure a fishing reserve for Aboriginal people.

his first wife, prompting the local non-Indigenous people to intervene. Roger was quickly arrested. Roger was later found guilty of manslaughter, for which he was sentenced to 12 months detention. This incident was the first time the non-Indigenous people of the district had moved to take the administration of Aboriginal justice out of the hands of the local Aboriginal community. Naturally, the local Aboriginal population resented this action and sought their *karadji*, Johnny Burriman, to act on the matter.[53]

Johnny Burriman was a lithe, tall and intelligent man who had forged a long association with non-Indigenous people in the area. The Aboriginal and non-Indigenous communities both respected Burriman. A contributor for *The Sydney Morning Herald* described Burriman as owing 'his superiority not only to his mental qualities, but also to his physical formation'

> …his walk was the perfection of grace…he was a thinker and an observer…practising mysteries for the benefit of his people when called upon.[54]

As *karadji*, Burriman was designated to go to the Shoalhaven's head waters to place certain stones in the current, and to perform certain other acts[55] which, according to a contributor to *The Sydney Morning Herald* in December 1871, resulted, *credit quisquis,* in 'the great flood of 1860, which devastated Shoalhaven!'[56]

Over twenty homes were washed away in the disastrous floods of 1860, which particularly decimated the Terara township, yet spared the Hyams' residence any damage. The township of Nowra, although surrounded by water, was safe for over a square mile although situated only about a mile from the deluged Terara. Substantial flooding would again devastate the district a decade later, at which time the community-minded Henry Moss was active in local

[53] "The Blacks of Shoalhaven, Part III", *The Sydney Morning Herald*, December 20, 1871, 7.
[54] "The Blacks of Shoalhaven, Part III", 7.
[55] "The Blacks of Shoalhaven, Part III", 7.
[56] "The Blacks of Shoalhaven, Part III", 7.

government. Moss helped local farmers after these floods by working in many ways for those affected, including lobbying the authorities.[57] Moss rallied by raising funds, offering wise counsel to the affected community members and by endeavouring to have those affected provided with grain to re-sow their fields. Further, he helped gain compensation from the government for those who had had their land washed away.[58] Moss was remembered by a writer for *The Shoalhaven Telegraph* in October 1887 for his labours for the Shoalhaven people, which were

> many and great. Though he had never received any recognition for those services, yet they found him right up to the time of his death unflagging in his energy and desire to benefit the district.[59]

The unmentionables of religion and politics

Henry Moss's family's involvement in local politics may have inspired Moss's interest in local government. Moss's uncle, Moses Moses was a member of the first council in Yass in 1843. Upon the formation of the first Shoalhaven municipality in 1859, Moss was made an alderman. About two years later, in February 1861, Henry Moss was elected as Mayor of the Shoalhaven municipality.[60]

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[57] "Shoalhaven", *Illawarra Mercury*, 1863, 2; "Southern Pencillings", *Australian Town and Country Journal*, December 9, 1882, 26; "The Disastrous Floods", *The Maitland Mercury and Hunter River General Advertiser*, February 21, 1860, 3.
[58] "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2; "Memorial to the Late Mr. H. Moss", *The Shoalhaven Telegraph*, October 12, 1887.
[59] "Memorial to the Late Mr. H. Moss", 2.
[60] Clark, "Henry Moss"; "Mayor of Shoalhaven", *Goulburn Herald,* June 5, 1861, 4; "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2.

Scottish merchant and colonist Alexander Berry was vehemently opposed to the idea of a Shoalhaven municipality. Berry refused to pay rates on his Shoalhaven land, which resulted in the action *Berry v. Graham,* challenging the legality of the municipality. In addition to Berry's strong opposition to the Shoalhaven municipal council, Berry was an outspoken anti-Semite and met Henry Moss's election as mayor with the utmost hostility and opposition. Berry used political efforts and legal means to oppress, isolate, undermine and slander Moss. Of those community members enthusiastic about the formation of a local government system, Berry said,

> the poor country people seem to be a set of asses only fit to be the negroes or slaves of the town… I cannot help laughing at the absurdity of the abolition of negro slavery when I perceive the country people of New South Wales anxious to become the White Negroes of the Jews and publicans of Towns and Villages.[61]

Alexander Berry was prone to 'recurrent expressions of anti-Semitism'[62] and made no secret of his utter dislike for Henry Moss[63] and his brother-in-law, Michael Hyam. In private correspondence from Alexander Berry to his brother David, Berry refers to Moss's supporters as 'white niggers'[64] dispelling any doubt the above statement was made in reference to men such as Henry Moss and Michael Hyam. Alexander Berry became the leader of the faction

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[61] T. M. Perry, "Berry, Alexander (1781-1873)", *Australian Dictionary of Biography*, Vol.1, 1966, https://adb.anu.edu.au/biography/berry-alexander-1773.
[62] B. J. Bridges. Aspects of the career of Alexander Berry, 1781 – 1873, Doctor of Philosophy thesis, Department of History and Politics, University of Wollongong Thesis Collection, University of Wollongong, 1992, 522, http://ro.uow.edu.au/theses/1432
[63] Decades later, in 1886, a contemporary of Henry Moss, Julian Salamons was the first Jewish man to be appointed Chief Justice of New South Wales, yet he ultimately declined being sworn in due to the overt hostility of the current members of the bench, despite it having been his goal for many years, determining his "temperament would not bear … the strain and irritation that would be caused by unfriendly relations": S. Edgar and B. Nairn. "Salomons, Sir Julian Emanuel (1835-1909)", *Australian Dictionary of Biography*, Vol.6 (Melbourne: Melbourne University Press, 1976), adb.anu.edu.au/biography/salomons-sir-julian-emanuel-4532; Berry to David Berry 6/7/1863, BP as quoted in Bridges. Aspects of the career of Alexander Berry.
[64] Berry to David Berry, 6/7/1863, as quoted in Bridges, Aspects of the career of Alexander Berry.

who opposed to the municipality of the Shoalhaven, known as 'Berryites'. Those in favour of the municipality were considered 'municipalityites'.[65]

Henry Moss was dedicated to the development of Nowra,[66] particularly after devastating floods saw Terara lose favour as a business centre. Moss's efforts infuriated Alexander Berry.[67]

Alexander Berry and his supporters, opposed to Henry Moss's mayorship, made no secret of their disapproval. A scathing letter expressing their condemnation was sent to the editor of the *Illawarra Express* that resulted in Moss suing, and winning his case for libel.[68] The letter referred to Moss's criminal history, stating Moss should consider himself fortunate to no longer be a 'mineralogist to her Majesty'. This being a common term in this era for prisoners who, under sentence of hard labour working in stone yards, were required to break up rocks into smaller, more workable stones.

Attempts to besmirch Henry Moss's reputation by publishing details of his past offense failed, as Moss had made no secret in the district of his past conviction for subordination of perjury.[69] In the first week of March 1861 Moss met further opposition from the bench of magistrates as he attempted to take up his mayoral duties, which included the positions of magistrate and Justice of the Peace. As a correspondent for the *Goulburn Herald* postured, the magistrates endeavoured 'to uphold the honour of the bench' and to 'prevent the

[65] Bridges, Aspects of the career of Alexander Berry; Perry, "Berry, Alexander (1781-1873)".
[66] Clark, "Henry Moss", 643-649.
[67] Bridges, Aspects of the career of Alexander Berry.
[68] "New South Wales Summary." *The Armidale Express and New England General Advertiser,* June 8, 1861, 2; "Mayor of Shoalhaven", *Goulburn Herald*, June 5, 1861, 4.
[69] "Mayor of Shoalhaven", 4; "News from the Interior", *The Sydney Morning Herald,* March 13, 1848, 3.

administration of justice falling into the hands of unprincipled men'.[70] Moss was, however, not the only New South Wales south coast alderman with a past conviction whose ideas for local advancement were converse to Berry's, however the other alderman – although a storekeeper and publican like Moss, was not of the Jewish faith.[71]

Alexander Berry and his supporters remained incensed at Henry Moss's position as mayor, endeavouring to do all they could to have him removed, eventually moving to have the whole of the Shoalhaven council declared illegal.[72] In the August of 1861, Moss was again taking an action for libel, this time against Dr Kenneth Mackenzie, a 'Berryite' and magistrate of the Shoalhaven district. Mackenzie, along with fellow magistrate, Mr James Thompson, were the men who had recommended Moss receive his free pardon in 1853.[73]

The libel referred to an extract from a letter written by Dr Kenneth Mackenzie to Alexander Berry, who was at that time a member of the Legislative Council. The *Illawarra Mercury*[74] reprinted Mackenzie's letter in part, including:

> Moss was no sooner invested with power than he felt an inveterate itching to commence the exercise of his magisterial functions, and finding no better case he pounced upon an unfortunate woman of colour, a native of the Sandwich Islands, and

[70] By contrast, ex-convict Joseph Pike, who had been transported from England under conviction of housebreaking, was at this time serving as an alderman for the Kiama Ward and would be elected six times as Mayor of Kiama in the coming years. Pike, like Moss both a storekeeper and a holder of a Spirit Merchant's Licence, was however of the Anglican faith, see Trove, "Joseph Pike – Kiama", anon, created March 8, 2015. https://www.trove.nla.gov.au/list?id=70001
[71] Pike was the holder of a Spirit Merchant's Licence, see Trove, "Joseph Pike – Kiama", anon, created March 8, 2015. https://www.trove.nla.gov.au/list?id=70001; "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury*, August 20, 1861, 2. "Mayor of Shoalhaven", *Goulburn Herald*, June 5, 1861.
[72] "Law and Police. Supreme Court Saturday – Sittings from the trial of causes. Before Justice Wise and a special jury of twelve. Myers v. Wright." *Sydney Mail,* August 17, 1861, 8.
[73] Clark, "Henry Moss", 643-649; "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury*, August 20, 1861, 2; "Law, Supreme Court – Friday, Sittings for the Trial of Causes. Jury Court. Before Mr. Justice Wise and a special jury of twelve. Moss v. Mackenzie.", *The Sydney Morning Herald* August 17, 1861, 5. "Mayor of Shoalhaven", *Goulburn Herald,* June 5, 1861, 4.
[74] "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury*, August 20, 1861, 2.

> for some time a resident of this district… as this woman's case affords a startling instance of the extent some magistrates carry their disregard of the liberty of the subject, their oppression of the helpless, and I may add, their villainy too.[75]

The accusations against Henry Moss related to the Goddard family who had been living in a small hut on Michael Hyam's property; a property upon which Moss and his family were also residing.[76] Englishman Henry Goddard, his Hawaiian wife Mary Goddard and their youngest daughter lived in the hut. Mary knew very little English and was described as 'a woman of colour, a native of the Sandwich Islands'.[77] Mary had formerly been confined for six months for insanity at the Hawkesbury and, at the time of Moss's lawsuit, Henry Goddard claimed she had been mentally unstable for several years.[78]

Mary's husband and her neighbours believed Mary to be a dangerous lunatic.[79] In fact, upon Moss being elected as Mayor Mary's own relatives and several householders in the district had petitioned Moss 'to take steps for her protection'.[80]

Displaced from the country of her birth, Mary Goddard may have struggled with life in the Shoalhaven as a woman of colour with little grasp of the English language. Mary was known to take off into the bush, sometimes completely naked, other times extravagantly attired. Mary would remain in the bush for days, living under sheets of bark, in holes, logs or rock

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[75] "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury,* (August 20, 1861, 2.
[76] "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", 2; "Friday. Moss v. Mackenzie", *Examiner,* August 20, 1861, 3.
[77] "Friday. Moss v. Mackenzie", 3. The term, "Sandwich Islands" in this instance refers to the Hawaiian Islands, which James Cook named the "Sandwich Islands" in 1778.
[78] "Law, Supreme Court – Friday, Sittings for the Trial of Causes. Jury Court. Before Mr. Justice Wise and a special jury of twelve. Moss v. Mackenzie.", *The Sydney Morning Herald,* August 17, 1861; "Friday. Moss v. Mackenzie", 3; "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", 2.
[79] "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury,* August 20, 1861, 2.
[80] "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", 2.

crevices. To her neighbours' dismay, Mary would carry firebrands around at all hours after dark. This made her neighbours fear for their haystacks. Making matters worse, Mary habitually set fire to trees near her neighbour's barns.[81]

Henry Moss's kindly interactions with Mary Goddard must have been galling for the prejudiced Alexander Berry.[82] A writer for *The Examiner* declared in July 1862 that in Kenneth Mackenzie's letter 'it would be seen Mr. Moss was charged with this dastardly and diabolical abuse of power'.[83] Another article published in *The Examiner* in August 1861 stated, 'the charge against the plaintiff, if made out, would be one of as gross abuse of official power as could well be imagined, and would, if brought before the Supreme Court and proved, expose him to indictment'.[84]

Mackenzie's vile accusations against Moss centred on the premise that Moss was intent on having Mrs Goddard sent to the lunatic asylum, as had been the request of her husband, in order for Moss to obtain unfettered access to the Goddard's very good-looking teenage daughter.[85] The jury eventually found in Henry Moss's favour after only an hour's deliberation and all Moss's dealings with the Goddard family were deemed by the court to

[81] "Law, Supreme Court – Friday, Sittings for the Trial of Causes. Jury Court. Before Mr. Justice Wise and a special jury of twelve. Moss v. Mackenzie.", *The Sydney Morning Herald,* August 17, 1861; Moss v. Mackenzie, *Illawarra Mercury,* August 20, 1861, 4; "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury,* August 20, 1861, 2.
[82] "Law, Supreme Court – Friday, Sittings for the Trial of Causes. Jury Court. Before Mr. Justice Wise and a special jury of twelve. Moss v. Mackenzie.", *The Sydney Morning Herald,* August 17, 1861.
[83] "Legislative Assembly", *Examiner,* July 8, 1862, 3.
[84] "Friday. Moss v. Mackenzie", *Examiner,* August 20, 1861, 3.
[85] "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury,* August 20, 1861, 2.

have been 'perfectly bona fide'.[86] Despite this victory, Moss would continue to be maliciously persecuted in the courts by his detractors.[87]

After Henry Moss was vindicated, he received continued harassment from those opposed to the Shoalhaven municipality. However, for all the ongoing harassment and abuse Moss encountered from those who despised both his Jewishness and his political views, Moss did not allow it to bother him very much. Potentially, Moss's persecution allowed him to have greater empathy for those around him also facing oppression from the colonists, like Alexander Berry. Moss built a reputation as a hard-working, honest man of robust sympathetic nature and significant tact. A writer for *The Shoalhaven News* and *South Coast Districts Advertiser* remembered Moss as one whom 'in works of charity and for the general good he was particularly prominent and very earnest'.[88]

Henry Moss is credited with having been instrumental in the formation of the municipality of Nowra.[89] In 1872 Henry Moss was elected the first Mayor of Nowra – a position he held for many years. It was not unusual for anxious supporters, who would affectionately refer to Moss as 'the General', to enquire at election time about Moss's success, asking about the 'General – how will the old General go?'[90] Rather than a reflection on any military-style

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[86] "Legislative Assembly", *Examiner,* July 8, 1862, 3; See also "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury,* August 20, 1861, 2; Moss v. Mackenzie, *Illawarra Mercury,* August 20, 1861, 4; "Law, Supreme Court – Friday, Sittings for the Trial of Causes. Jury Court. Before Mr. Justice Wise and a special jury of twelve. Moss v. Mackenzie", *The Sydney Morning Herald,* August 17, 1861; "Supreme Court Sydney. Henry Moss v. Kenneth MacKenzie", *Illawarra Mercury,* August 20, 1861, 2; G. U. Alley, Letter to the Editor, *Illawarra Mercury*, June 11, 1861; B. J. Berry "Aspects of the career of Alexander Berry, 1781-1873" PhD Thesis (1992): 475-476, https://ro.uow.edu.au/theses/1432/; "Berry to David Berry, 6/7/1863", as quoted in Bridges, Aspects of the career of Alexander Berry, 506; "Legislative Assembly", *Examiner,* July 8, 1862, 3; "New South Wales Parliament", *The Sydney Morning Herald,* June 11, 1862, 3.
[87] "Legislative Assembly", *Examiner,* July 8, 1862, 3; "Petty Sessions, Nowra," *Illawarra Mercury,* December 20, 1861, 2.
[88] "Old Shoalhaven Days", *The Shoalhaven News and South Coast Districts Advertiser*, August 22, 1903, 4.
[89] "Memorial to the Late Mr. H. Moss", *The Shoalhaven Telegraph*, October 12, 1887, 2.
[90] "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2.

authority Moss possessed, the moniker derived from the community's acknowledgment that Moss was 'the general head of everything'[91] in the district. Moss dedicated 36 years of his lifetime to making Nowra a major country town; between 1874 and 1886 Moss served a total of seven terms as a Mayor of Nowra.[92] In his role as Mayor, Moss endeavoured to take care of the areas Aboriginal inhabitants alongside the non-Indigenous members of the growing township.

Henry Moss and Sarah Hyam

In 1862, at the beginning of his years of political service and still a shopkeeper, Henry Moss married his step-niece, the daughter of Michael Hyam, Sarah Zorilda Hyam. Moss and Sarah were married on Christmas day. At the time of his marriage, Henry Moss had publicly adopted the surname 'Moss's in place of 'Moses', but his legal name, 'Henry Moses', appears on the Marriage Certificate.[93] Sarah Hyam was an asset to Henry throughout his life. Sarah was a loving wife and partner, sharing his Jewish faith, heart for Aboriginal people, an appreciation for Aboriginal culture and a passion for geology. Sarah enhanced Henry's relationships with the local Aboriginal people, being a woman with close connections to the area's Aboriginal people forged from childhood.

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[91] "The Late Mr. Henry Moss", *The Shoalhaven Telegraph*, April 11, 1888, 2.
[92] S. Liberman. *The Bibliography of Australasian Judaica 1788-2008*, Melbourne: Hyprid Publishers, 2018; "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2.
[93] G. Bergman, 'Aaron Alexander Levi', in: R. Apple, (ed), *The Great Synagogue: A History of Sydney's Big Shule,* Sydney: UNSW Press, 2008,107-108; "The Late Mrs S. Z. Moss of Nowra", *The Hebrew Standard of Australasia,* November 9, 1928, 10; NSW Births, Deaths and Marriages, Marriage Certificate Reg. No. 3007/1862.

Sarah Moss – Medicine Woman

Born Sarah Zorilda Hyam in Sarah's Valley, Jamberoo on 21 December 1840, Sarah shared Henry Moss's Jewish faith, strong sympathetic nature, philanthropic disposition, community-mindedness and keen interest in geology.[94]

When Sarah was around six years of age her mother passed away, spurring widower Michael Hyam to relocate his young family to 'The Corals', a property on Nowra's outskirts, where Sarah would live for the next 80 years. Sarah enjoyed a good friendship with the Aboriginal people of the south coast from a young age.

Sarah's family home was located in an area that served as a

> boundary between two major linguistic groups of coastal Aboriginal people. To the north, as far as Botany Bay, were the Wodi-Wodi, speaking Tharuwal;[95] to the south, down to Wallaga Lake, were the Wandandian, speaking Dhurga. These two linguistic areas both extended to the west beyond the present Shoalhaven Council boundaries.[96]

Sarah's relationship with the Aboriginal people of Shoalhaven was a reciprocal one. A highly intelligent woman, Sarah learned from the local Aboriginal people the intricate preparation of principal bush food

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[94] "The Late Mrs S. Z. Moss of Nowra", *The Hebrew Standard of Australasia,* November 9, 1928, 10; "Obituary. The Late Mrs. Henry Moss", *The Kiama Independent and Shoalhaven Advertiser*, October 27, 1928, 2; "The Death of Mrs Moss", *The Nowra Leader,* October 26, 1928; "The Death of Mrs Moss: a worthy old pioneer", *The Shoalhaven Telegraph,* October 24, 1928, 5.
[95] also spelt *Dharawal*.
[96] R. Florance, H. Smit, R. Hobbs, P. Gant, and Peter Freeman Pty Ltd and Heritage Archaeology, Graham Lodge Precinct, *Nowra: Conservation Management Plan*, Vol.1 of 3, Conservation Analysis (August 2000): 8. www.shoalhaven.nsw.gov.au/Portals/WebDataStore/Indexed/D11_145519.PDF.

> [Sarah] was a great friend to the [A]boriginals and from them learned of the edible quality of the burrawang roots. From the graceful palm-like growth she extracted arrowroot of such fine quality that it was awarded a medal at the Paris Exhibition in 1867.[97]

Due to her close relationship with the local Aboriginal women, Sarah was adept at extracting excellent quality seed starch from the burrawang. Sarah's knowledge is representative of an investment of substantial time carefully observing traditional Aboriginal practice. This led to Henry Moss undertaking considerable energetic promotion of this readily available, nutritious native food source. The Moss's affection for the burrawang plant even extended to their using its leaves ornamentally. The opening of the Nowra Bridge saw the Moss's Central Hotel profusely decorated with the graceful fronds of the burrawang plant.[98]

Having learned about the multi-purpose use and value of various indigenous flora from the local Aboriginal people in her earlier years, Sarah Moss was known around the Shoalhaven district for her keen interest in agriculture. Sarah was a great supporter of the early agricultural shows, having put together several successful exhibits in the domestic and household areas.[99]

Sarah Moss possessed an effective and valuable familiarity with bush medicine treatments, which she used to benefit of the wider community. During the time she spent with the local Aboriginal people, Sarah would have learned that women played a major part in the health care of the community. Older women were knowledge holders of bush food processes, herbal

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[97] "Obituary. The Late Mrs. Henry Moss", *The Kiama Independent and Shoalhaven Advertiser*, October 27, 1928, 2
[98] "The Nowra Bridge." *The Kiama Independent and Shoalhaven Advertiser,* August 9, 1881, 4.
[99] "The Death of Mrs Moss: a worthy old pioneer", *The Shoalhaven Telegraph,* October 24, 1928, 5.

remedies, bush medicines and traditional midwifery practices.[100] In all probability, Sarah learned of the existence of Aboriginal manufactured therapeutic alum crystals from Shoalhaven's Aboriginal people, and may have utilised them in her treatment of the region's sick.[101] Sarah 'made a name for herself by rendering kindly help in sickness and distress, riding through rough bush tracks to all parts of the district where her advice and assistance were needed'.[102]

The large specimens of crystallised alum in Henry Moss's ethnological collection were manufactured and traded by the Worimi people and had been traded to the Shoalhaven's Aboriginal people. The south coast Aboriginal people often travelled along the Great Dividing Range to the northeast to trade with their allies, the Awabakal and the Darkinjung. The D'harawal people of the south coast manufactured hatchets and there is evidence these were traded to the northeast. Moss's alum crystals moved in a south-eastern direction from Bulahdelah in the north to the Shoalhaven in the south. Alum crystals were likely traded at the same various ceremonial gatherings at which the D'harawal hatchets were also exchanged.[103]

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[100] J. Isaacs. *Aboriginal Bush Food and Herbal Medicine*, Sydney: Weldon, 1987, as outlined in J. Flood. *The Original Australians: The story of the Aboriginal People*, Crows Nest: Allen and Unwin, 2019, Second Edition.
[101] "The Death of Mrs Moss", *The Nowra Leader,* October 26, 1928; "The Death of Mrs Moss: a worthy old pioneer", *The Shoalhaven Telegraph,* October 24, 1928, 5; "The Late Mrs S. Z. Moss of Nowra", *The Hebrew Standard of Australasia,* November 9, 1928, 10; "Obituary. The Late Mrs. Henry Moss", *The Kiama Independent and Shoalhaven Advertiser*, October 27, 1928, 2.
[102] "The Death of Mrs Moss: a worthy old pioneer", *The Shoalhaven Telegraph,* October 24, 1928, 5.
[103] Umwelt (Australia) Pty Ltd. Bulahdelah Mountain: Aboriginal Place Nomination Assessment. A report prepared for NSW National Park and Wildlife Service. Ref: 1747/R01/V1 (June 2003); Karen Stokes, Stone, Sources and Social Networks: Tracing Movement and Exchange Across Dharawal Country, Southeastern Australia, thesis submitted for Bachelor of Arts, Archaeology: University of Sydney, (2015); Frances Bodkin, *D'harawal: Climate and Natural Resources*, Sussex Inlet: Envirobook, 2017; A. W. Howitt, *Native Tribes of South-East Australia.* London: MacMillan, 1904.

Sarah Moss's childhood home on Nowra's outskirts was situated only a few kilometres west from Greenwell Point, which newspapers report[104] was named after a celebrated *karadji* nicknamed, 'Doctor Greenwell'. Dr Greenwell had a stellar reputation for curing aches and pains, in particular toothache and snakebites. Greenwell was very highly regarded and, to maintain his reputation in the district, would refuse to treat patients he deemed as hopeless cases. Reputation being paramount, Greenwell refused to treat a snakebite victim on account of the type of snake that had inflicted the bite and the time that had elapsed since the bite had occurred. Another younger Aboriginal doctor, not considered to have as good a skillset as Greenwell, was encouraged to try and help the victim. After the younger *karadji's* treatment, the victim is reported to have recovered. This interesting account informs that there were at least two practicing *karadji* active at this time in the Shoalhaven district.[105]

It is probable Sarah Moss was educated by her Aboriginal friends in the treatment of many common ailments, which led to her contribution to the local community as a bush medicine woman. Snakebites, toothache, wounds, skin eruptions, diarrhoea and constipation were commonly treated with medicinal barks, leaves, roots or mineral applications. Wounds would be traditionally treated with clay or mud, while to heal sores a paste of ochre is used

> rich goanna fat soothes burns, and eucalyptus gum salves toothache and dental cavities. Soaked wattlebark was drunk as cough medicine, gum leaves acted as poultices for snakebite, headaches and boils, and stringy-bark was used as bandages ... A mixture of powdered white pipeclay, hot ashes and fat was sometimes applied as a poultice, and spider's web could be used to staunch a flow of blood.[106]

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[104] "History of the Shoalhaven Area", *South Coast Times and Wollongong Argus,* May 7, 1951, 1.
"The Blacks of Shoalhaven", *The Sydney Morning Herald,* December 8, 1871, 5.
[105] "The Blacks of Shoalhaven", *The Sydney Morning Herald,* December 8, 1871, 5.
[106] J. Isaacs, *Aboriginal Bush Food and Herbal Medicine*, Sydney: Weldon. 1987, as outlined in J. Flood, *The Original Australians: The story of the Aboriginal People*, Crows Nest: Allen and Unwin, 2019, 178.

Along with specimens of crystallised alum, medicinal bark, fine pearly white pipeclay[107] and items made from stringy-bark featured in Henry Moss's ethnological collection being part of the Aboriginal pharmacopoeia. In all probability, these items were well-used by Sarah in her bush medicine practice.

In her early years, when Sarah Moss worked within the Shoalhaven community as a medicine-woman, Aboriginal people were noted as being 'numerous along the banks of the Shoalhaven River'.[108] In her later years, Sarah was known to have 'helped [Aboriginal people] in many ways'.[109] A writer for *The Hebrew Standard of Australasia* reiterated this fact in November 1928, reporting, 'Mrs Moss was a good friend to the early Aboriginals of the district in obtaining, per medium of her husband, assistance from the Governments of the day'.[110] Sarah's good relationships with local Aboriginal people and Henry's political position and deep compassion for those suffering inequity enabled this couple to be effective advocates for the local Aboriginal community.

Henry and Sarah Moss's aid to the south coast Aboriginal people

Henry Moss's various positions within local government, and his skilful letter writing at a time when many people were not literate, enabled Moss to obtain assistance from the relevant authorities for Shoalhaven's Aboriginal population. Moss received many beneficial results for the local Aboriginal people. Due to his efforts, Henry and Sarah Moss's enduring

[107] Generally, this pipeclay was made up predominantly of kaolin. White kaolin clay had various medical applications within the Aboriginal pharmacopoeia.
[108] "Death of Mrs. Moss: A Worthy Old Pioneer", *The Shoalhaven Telegraph* October 24, 1928, 5.
[109] "Death of Mrs. Moss: A Worthy Old Pioneer", 5. See also: "The Late Mrs. S. Z. Moss of Nowra", *The Hebrew Standard of Australasia,* November 9, 1928, 10.
[110] "The Late Mrs. S. Z. Moss of Nowra", 10.

relationship with the local Aboriginal people certainly played an important part in Moss's ability to curate a wide and varied ethnological collection.[111]

The Moss's took steps on the behalf of Shoalhaven's Aboriginal community many times over the years, not the least of which was to ensure they were provided with ample warm clothes and blankets. An anonymous appeal written to the editor of the *Empire* was published in June 1869. This letter, asked for blankets to be sent without delay to the Shoalhaven for the local Aboriginal people, and was almost certainly written by Henry Moss. Moss was a regular contributor to the *Empire*, was well known to the editor and had been employed as an *Empire* correspondent.[112] The blankets, usually supplied annually around May, were well overdue at the time this appeal was written, and the south coast's weather in mid-June had turned bitter cold. The letter was signed simply 'Humanity' of 'Nowra, Shoalhaven', and implored, 'it would be an act of charity to advocate their great want which they have been deprived of. I wish the people of Sydney, who are enjoying the warmth of a cheerful fire, would have some sympathy'. The letter further appealed to the readers of the *Empire* to 'raise their voices for the blankets to be sent speedily. We cannot account for the neglect'.[113] The writer did not know who was responsible for the delay in provision of these annual blankets to the Shoalhaven Aboriginal people. A sense of the writer's outrage and frustration at such callous disregard can be determined from the closing sentence of their appeal, which reads, 'whoever is guilty of such cruel neglect, ought certainly be "well tossed in a blanket",'.[114]

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[111] A. Clark, "Henry Moss: He Had A Vision For Nowra", *Australian Jewish Historical Society Journal*, v.11, No.4, (1992): 643-649. "Arrowroot Maker", *Nambucca and Belliger News,* November 16, 1928, 3. "The Death of Mrs Moss", *The Nowra Leader,* October 26, 1928; "Obituary. The Late Mrs. Henry Moss", *The Kiama Independent and Shoalhaven Advertiser*, October 27, 1928, 2.
[112] "To the Editor of the Empire", *Empire*, July 8, 1862, 2; "Shoalhaven", *Empire*, June 7, 1862, 5; "On A Fallen Star", *Empire*, April 9, 1860, 5; "The Lost Star of Love", *Empire*, May 13, 1862, 4; "Hope", *Empire*, March 30, 1860, 5; "The Jewish Captive's Song", *Empire*, December 1, 1860, 10.
[113] "Blankets for the Blacks", *Empire,* June 15, 1869, 3; "Local and General News: Reward for Merit", *The News, Shoalhaven and Southern Coast Districts Advertiser,* July 31, 1869, 2.
[114] "Blankets for the Blacks", 3; "Local and General News: Reward for Merit", 2.

In 1879 Henry Moss encouraged Shoalhaven residents to sign a petition requesting the government set aside Mosquito Island as a reserve to be used as a Fishing Station for Aboriginal people. Moss believed the Fishing Station, located between Numba and Greenwell Point, would provide an important benefit for the Aboriginal people of the area.[115]

Henry Moss's requisition on behalf of the Shoalhaven Aboriginal people was sent to Mr Garrett, M.L.A., the Minister of Lands, and requested certain areas be put aside for them for traditional fishing, camping and hunting purposes. Moss's petition was answered as follows:

> Department of Lands,
>
> Sydney, 17th March, 1881.
>
> Sir, - In reference to your recommendation of the memorial presented by you, and signed on behalf of the natives of the Shoalhaven district, by Mr. H. Moss, praying that certain reservations might be made in their interests, I am directed to inform you that the matter has been referred to the Surveyor-General for report, upon receipt of which you will be further advised.
>
> I have the honour to be, Sir,
>
> Your most obedient servant,
>
> Charles Oliver.
>
> Mr Thomas Garrett, M.L. A., Sydney.[116]

[115] Clark, "Henry Moss", 643-649; "Local Intelligence", *The Armidale and New England General Advertiser,* December 16, 1879, 2; Local Intelligence: Fishing Station for The Aborigines", *The Telegraph and Shoalhaven Advertiser,* September 2, 1880, 2.
[116] "A Home for the Aboriginals", *The Telegraph and Shoalhaven Advertiser,* May 5, 1881, 2.

This was followed a few months later with the below response, which Henry Moss received through the Minister of Lands, Mr Thomas Garrett, M.P.:

Department of Lands,

Sydney, 17th October, 1881.

Sir, - In reference to the letter presented by you from Mr. H. Moss, of Shoalhaven, applying on behalf of certain [A]borigines, at Jervis Bay, for a reserve for a hunting ground at that place, I am directed to inform you that the Secretary of Lands has approved of the reservation of an area of about 700 acres for the use of [A]borigines, being reserve No. 101, in the County of St. Vincent, Parish of Wooolamboola, notified in the Government Gazette of the 26th ultimo.

I have the honour to be, Sir,

Your most obedient servant,

Charles Oliver. Under Secretary.

Mr T. Garrett, M.P., Sydney.[117]

Henry Moss knew the traditional fishing technology utilised by Aboriginal people was diminishing because of colonisation. For the Aboriginal population of Australia's eastern coastline, fishing is culturally important. Fishing provided Aboriginal people with a significant opportunity of maintaining some economic independence.[118] Moss's assistance helped the local Aboriginal people to maintain their financial self-determination, many becoming principally reliant on the fishing industry by the end of the nineteenth century.[119]

[117] "Local Intelligence", *The Shoalhaven Telegraph,* October 27, 1881, 2.
[118] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*, October 30, 1879, 2; Cruse et al., *Mutton Fish*, 23; "Pleasure Resorts", *The Australian Star,* September 22, 1894, 8.
[119] "My Native Mates", *Evening News,* March 13, 1897, 3.

The Aboriginal Protection Board's Annual Report of 1890 states that a 'fair' amount of money had been raised by Greenwell Point's Aboriginal residents through the sale of fish to local residents. Aboriginal people of New South Wales' south coast have been nurtured and sustained by their coastal environment for millennia. In the late nineteenth century and early twentieth century, many Aboriginal people relied upon work in the Shoalhaven fishing industry to sustain their families, as did my grandfather, James Reuben DeLore Douglas. A common view[120] held by residents in the Shoalhaven and Illawarra areas, which is demonstrated in a report by a correspondent for the *Nowra Colonist*, "that Aboriginal people were 'weighted' by a 'lazy feeling' and much could be done to encourage them to take up employment in 'gardening or poultry raising',".[121] The writer was clearly ignorant of the efforts made by Aboriginal people to support themselves, not in the least of which was through fishing. Government records plainly detail several men in the Shoalhaven Aboriginal community were working fishermen and that fishing provided a means by which Aboriginal men could support their families. The Mosses' assistance in securing a vessel, fishing equipment and help in securing fishing and hunting grounds for the Shoalhaven Aboriginal community further cemented them as both friends and supporters.[122]

Sarah Moss: 'The Arrowroot Maker'

A woman of superior intellect and a careful study, Sarah Moss took an active interest in Aboriginal culture. Sarah acquired knowledge from the local Aboriginal people of how to

[120] M. Bennett, "The economics of fishing: sustainable living in colonial New South Wales", *Aboriginal History*, 31 (2007), 85-99.
[121] *Nowra Colonist*, October 11, 1899, 2, as detailed in Bennett, "The economics of fishing", 85-99.
[122] Bennett, "The economics of fishing", 95-96, 98.

extract the seed starch the settler-colonists called 'arrowroot' from burrawang[123] nuts. If this process is not followed correctly the seed starch produced is toxic. Sarah shared the specifics of the traditional Aboriginal extraction process with her husband. Henry Moss entered quantities of excellent quality seed starch produced using this process in several international exhibitions, and was awarded several medals and awards for his exhibits.[124]

The NSW *Medical Gazette* published in December 1871 contained two letters from Henry Moss relating to the manufacture of seed starch from the *Macrozamia Spiralis* nuts. [125] Traditionally, the seed starch is used to make a sweet and nutritious loaf, similar to a flat cake. [126] In these letters, Henry enthusiastically shared the procedure he utilised to process such fine seed starch.[127]

Henry Moss's raw zeal for the burrawang's arrowroot is easy to understand. A decade earlier, Moss was dealing with the aftermath of terrible Shoalhaven floods that had claimed lives, livestock and homesteads and left every farm awash. Moss was concerned about hundreds of homeless residents perishing from starvation after local cultivations were left sodden or completely washed away. Valentine's Day 1860 saw Moss convinced the affected south coast residents faced 'certain doom'[128]. Moss sent his written plea for help on the first

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[123] *Macrozamia*; or *Macrozamia Spiralis.*
[124] "Personal", *The Richmond River Herald and Northern Districts Advertiser*, November 6, 1928, 2; "Death of Mrs. Moss: A Worthy Old Pioneer", *The Shoalhaven Telegraph,* October 24, 1928, 5. "The Late Mrs. S. Z. Moss of Nowra", *The Hebrew Standard of Australiasia,* November 9, 1928, 10; "Arrowroot Maker", *Nambucca and Belliger News,* November 16,1928, 3; "The Death of Mrs Moss", *The Nowra Leader,* October 26, 1928; "Obituary. The Late Mrs. Henry Moss", *The Kiama Independent and Shoalhaven Advertiser*, October 27, 1928, 2.
[125] H. Moss, "Letter to the Editor", *NSW Medical Gazette 1871*, Vol 2, 1, 1871-1872, Sydney: (1871): 88 as quoted in "Local Intelligence: Relics of a departing race", *The Armidale Express and New England General Advertiser,* December 16, 1871, 6.
[126] "Local Intelligence: Relics of a Departing Race", *The Armidale Express and New England General Advertiser,* December 16, 1871, 6.
[127] H. Moss, "Letter to the Editor", *NSW Medical Gazette 1871*, Vol 2, 1, 1871-1872, Sydney: (1871): 88, as quoted in "Local Intelligence: Relics of a departing race", *The Armidale Express and New England General Advertiser,* December 16, 1871, 6.
[128] "The Flood At Shoalhaven", *The Sydney Morning Herald,* February 16, 1860, 6.

steamer leaving for Sydney after the flooding. Of the homeless and distressed, Moss simply wrote that their eminent 'starvation is too fearful to contemplate'.[129]. At this time the land around Nowra abounded in burrawang, which the colonists had deemed worthless.[130] A little over two years after the devastating floods of 1860, Moss would take Sarah Hyam as his bride, and she would share with him her knowledge of the burrawang and its arrowroot. This would result in Moss's energetic promotion to colonial authorities of the readily obtained burrawang seed starch, an enthusiasm would span decades.

On the subject of the burrawang, Henry Moss asserted, 'before this country was inhabited by the white man, the [A]boriginal's chief food was this identical nut, pounded up, and then placed under a gentle fall of water for two days',[131] which Moss determined effective in removing the pernicious oil. It would be, according to Moss, 'a great pity to see such a waste of food of this nature'.[132] Henry Moss further enthused, 'I think it would be first-rate for a company to go into the affair',[133] elaborating that he knew of a child who, as an infant, had been reared on nothing else but burrawang starch. [134]

When describing the method used to obtain the excellent quality arrowroot from the seeds of *Macrozamia spiralis*, Henry Moss revealed,

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[129] "The Flood At Shoalhaven", 6.
[130] The burrawang was of value to Aboriginal people for its seed starch as well as its extremely valuable and easily obtained gum that was used in the manufacture of weapons. The burrawang gum was worth £20 to £25 per tonne in London in the early 1880s. The burrawang gum made a useful varnish and the aromatic smell produced whilst burning was highly sought after for incense in Roman Catholic countries, *see* "Southern Pencillings", *Australian Town and Country Journal*, (December 9, 1882): 26.
[131] "Local Intelligence: Relics of a Departing Race", *The Armidale Express and New England General Advertiser,* December 16, 1871, 6.
[132] "Local Intelligence: Relics of a Departing Race", 6.
[133] H. Moss, "Letter to the Editor", *The NSW Medical Gazette 1871*, 88 as quoted in "Local Intelligence: Relics of a departing race", *The Armidale Express and New England General Advertiser,* December 16, 1871, 6.
[134] "Local Intelligence: Relics of a Departing Race", 6.

> I had the shells broken from the nuts, then placed in tubs of pure water and pounded quite soft with a wooden rammer; then roughly strained to get all the debris of the nut away; then strained through fine cheesecloth, and the liquid allowed to stand for forty-eight hours in a long cask, plenty of fresh water being added in the interval. I had spill holes made in the cask within a few inches of the bottom, so that the water could be drawn off without disturbing the sediment in any way. After draining and re-adding pure water several times, until the oil disappeared, then the arrowroot formed a cake at the bottom. The water was then all drawn off, the cake of arrowroot cut out and dried in the sun, and then, when dry, reduced by fine rolling.[135]

Moss's recipe was derived from the traditional Aboriginal process of pounding the nut between stones and then placing large kernels in a coolamon under a gentle waterfall or in a stream of running water until the pernicious oil was removed, which usually took around 48 hours or so.

A writer for *The Nowra Leader* speculated in July 1910 that Henry Moss had been the first and only non-Indigenous person to prove the edible value of the burrawang nut up to 1869.[136] However, it was Sarah Moss, not her husband, who was the first non-Indigenous person to learn from Aboriginal people how to extract edible seed starch from the burrawang. In an article written for the *Nambucca and Bellinger News* in 1928 announcing her passing, Sarah was remembered as an arrowroot maker who used Aboriginal traditional knowledge in her work. In the nineteenth century, it was Henry Moss, not his wife, that received recognition

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[135] John W. Thiert, "Economic Botany of the Cycads", *Economic Botany*, Vol. 12, No.1, (January – March, 1958):16.

[136] H. Moss, "Letter to the Editor", *NSW Medical Gazette*, Vol.2. (1871): 88, as quoted in "Local Intelligence: Relics of a departing race", *The Armidale Express and New England General Advertiser,* December 16, 1871, 6.; "Arrowroot from Burrawang Nuts. Made by the Late Mr. Henry Moss", *The Nowra Leader*, July 1, 1910, 7; M. Salmon, "In The Shoalhaven District: An Aboriginal Settlement", *Evening News*, 1905, 8; W. Bauerten, "Burrawang Nuts", *The Sydney Morning Herald*, June 29, 1910, 7.

for the exceptional burrawang seed starch presented at many exhibitions just as Thomas Mayers had received all the recognition in his community, with little to no mention of his wife, Mary-Ann or her valuable contributions and cultural knowledge. In the twentieth century, and some four decades after Henry's passing, Sarah received the posthumous public recognition for her arrowroot making. Henry Moss's public dissemination of this cultural knowledge that imparted non-Indigenous Australia with beneficial information regarding this valuable indigenous food source.[137] The colonists generally adopted the Aboriginal name burrawang to describe the *Macrozamia spiralis,* or referred to it simply as the native palm. However, the fern quickly came to be known by Sydney's colonial youth as, 'Blackfellows' potatoes'.[138]

Billy Bulloo: early trade in mineral specimens

Henry Moss's procurement of alum crystals from the Shoalhaven Aboriginal people rendered him cognisant of Aboriginal people's knowledge and use of valuable geological resources. Perhaps the use of alum crystals in Aboriginal healing practice spurred Sarah Moss's interest in geology. Moss sought out Aboriginal knowledge regarding the Shoalhaven district's mineral resources and provided Aboriginal people compensation for specimens.

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[137] "Arrowroot from Burrawang Nuts. Made by the Late Mr. Henry Moss", *The Nowra Leader*, July 1, 1910, 7;
[138] "On Macrozamia Spiralis, or Burrawang of New South Wales", *The Week: The Sydney Mail and New South Wales Advertiser,* October 14, 1871, 4; John W. Thiert, "Economic Botany of the Cycads", *Economic Botany*, Vol. 12, No.1, (January – March, 1958):16. "The Burrawong *(sic)*", *The Gosford Times and Wyong District Advocate*, December 9, 1920, 6; "Burrawang Leaves: Advertising", *Casino and Kyogle Courier and North Coast Advertiser,* April 11, 1908, 8. **"**An Obscure Cattle Disease", *The Sydney Morning Herald,* September 13, 1899, 10. **"**Our baby competition: Seventh instalment", *The Queenslander,* May 21, 1898, 988. The name, *Blackfellows' potatoes*, was also bestowed on other tuberous roots, see "Blackfellows' Potatoes", *Sydney Mail,* March 9, 1921, 12 and generally denoted a chief food source of Aboriginal people reminiscent of potatoes or yams.

The discovery of gold in New South Wales saw a large increase to the state's population. Fortune hunters flocked to the areas rumoured to hold gold deposits, while others came for the promise of fertile soil. The sudden invasion of newcomers to these lands, previously the sole domain of the Aboriginal people, did not take long to produce damaging consequences for the Aboriginal occupants of these areas.[139]

Billy Bulloo, an old Aboriginal man in the Shoalhaven area, used the colonists' thirst for mineral wealth to his own advantage. Many people in the Shoalhaven area became convinced the Shoalhaven gorges contained a pure gold outcrop. The location of this outcrop was believed to be only known to Bulloo, whom the colonisers referred to as 'Billy Blue'[140]. Shoalhaven residents and gold-seekers alike came to call this fabled gold protrusion, 'Billy Blue's Reef' after Billy Bulloo. This hidden '*El Dorado*' captured the imaginings of those who heard tell of it, quickly becoming the stuff of legends.[141]

Billy Bulloo as the king[142] or chief[143] of the Wodi-Wodi people, whose Country he defined as the Marulan side of the Shoalhaven River.[144] Norman Tindale, an anthropologist,

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[139] "The Tourist, The Blacks of Shoalhaven", *The Sydney Mail and New South Wales Advertiser*, January 6, 1872, 11.
[140] J. H. Sturgiss, *The Man from The Misty Mountains*, Eastwood: The Budawang Committee, Australia, 1986, 141-142. Shoalhaven's Billy Bulloo should not be confused with the well-known Sydney identity, Billy Blue (c.1767-1834). This Billy Blue claimed to have served in the British Army during the American War of Independence and had arrived in Australia as a convict. Billy Blue, the convict, was of possible West-Indian descent and it was for him whom Blues Point in Sydney is named. See Margaret Park, "Blue, William (Billy) (1767-1834)", *Australian Dictionary of Biography*, supplement 2005, online 2006, https://adb.anu.edu.au/biography/blue-william-billy-12804.
[141] J. H. Sturgiss, *The Man from The Misty Mountains*, Eastwood: The Budawang Committee.1986, 141-142; W. J. Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, (February 23, 1927): 3. "News and notes", *The Shoalhaven Telegraph*, 20 April 1904, 11.
[142] . "Billy Blue's Gold A Mystery", *South Coast Register*, last updated 19 June 2018, https://www.southcoastregister.com.au/story/5477039/billy-blues-gold-a-mystery/ 2020
[143] H. J. Rumsey, "Land of Opportunity, Tedme Haynes Hears All, About 'Billy Blue's Reef', Mr H. J. Rumsey's Serial", *The Farmer and Settler*, 1919, 13 May, 3.
[144] J. Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly,* October 27, 1923, 19. "Billy Blue's Gold A Mystery", *South Coast Register*, last updated 19 June 2018, https://www.southcoastregister.com.au/story/5477039/billy-blues-gold-a-mystery/ 2020; "Other Incidents Connected with Billy Blue", *The Nowra Leader,* September 2, 1932, 1; "History of the Shoalhaven Area", *South Coast Times and Wollongong Argus,* May 7, 1951, 1. Margaret Park, "Blue, William (Billy) (1767-1834)",

archaeologist, entomologist and ethnologist, estimated the Wodi Wodi people occupied the country from the north of the Shoalhaven River stretching all the way to Wollongong. [145] Other sources[146] list Bulloo as being from the Bong Bong people.[147] This group of Aboriginal people were known to camp around the Wingecarribee River in the Southern Highlands. Part of the Gundungurra people, Bong Bong Country extends from Goulburn in the south to Cox's River and Warragamba in the north. The Bong Bong reportedly intermarried with those from the Yuin nation, in particular the Walbanga people of the Braidwood area[148]. In between Marulan, which is Wodi Wodi Country, and Sutton Forest, which is Bong Bong Country, sits the town of Penrose. Penrose was formerly known as 'Foster's Camp' and was an area Bulloo was known to frequent.[149]

Shoalhaven's Billy Bulloo sold geological specimens to Henry Moss on many occasions. Moss purchased gold from Bulloo, the amount of which became exaggerated by local legends surrounding the fabled 'Billy Blue's Reef'. In reality, Bulloo traded Moss only very small amounts of gold.[150] Moss staunchly rebuked the idea that Bulloo had knowledge of a gold reef in the Shoalhaven area, and almost 50 years after Moss's passing, his family would still label the theory of Bulloo's reef pure fantasy.[151]

Australian Dictionary of Biography, supplement 2005, online 2006, https://adb.anu.edu.au/biography/blue-william-billy-12804.

[145] Listed as a language by W. Ridley, "Kamilaroi, and other Australian languages", Sydney: (1875):121 Wodi Wodi is in fact the name of a social group of the Illawarra area from Wollongong to Jervis Bay. The language of the Wodi Wodi is a southern dialect of Dharrawal. Referred to as the 'Tallowa tribe' by Rumsey (H. J. Rumsey, "Land of Opportunity, Tedme Haynes Hears All, About 'Billy Blue's Reef', Mr H. J. Rumsey's Serial", *The Farmer and Settler*, 13 May, 1919, 3, likely a reference to the Tallowa district of the Kangaroo Valley in Wodi Wodi territory.

[146] "Billy Blue's death notice. Town and Country", *Sydney Mail*, September 26, 1868, 5.

[147] The Bong Bong were also recorded as the 'Sutton Forest tribe' or 'Throsby's tribe'. Dr Charles Throsby had landholdings at Moss Vale. See P. Prineas. *Wild Places: Wilderness in Eastern New South Wales*, The Colong Foundation for Wilderness Limited, 1997, 73.

[148] "Billy Blue's death notice. Town and Country", *Sydney Mail,* September 26, 1868, 5.

[149] "The Cedar-Cutter's Goldmine", *The Scrutineer and Berrima District Press,* April 18, 1934, 2.

[150] "Other Incidents Connected with Billy Blue", *The Nowra Leader,* September 2, 1932, 1.

[151] J. Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly,* October 27, 1923, 19; "Billy Blue's Gold A Mystery", *South Coast Register*, last updated 19 June 2018, https://www.southcoastregister.com.au/story/5477039/billy-blues-gold-a-mystery/ 2020 (South Coast Register);

Billy Bulloo collected small amounts of gold from potholes and riverbeds when the rivers were low.[152] Bulloo kept these finds in a pickle bottle he kept close to him. Bulloo stored his gold-studded quartz in a billy-can.[153] Bulloo was witnessed waking by his campfire one morning and immediately retrieving his golden nuggets hidden inside of a nearby rotting stump. Once Bulloo was aware he had been seen 'no more banking was done in the hollow stump'.[154] The local oral histories of Billy Bulloo have morphed from memories into myths and legends. Bulloo's name is remembered West of Bundanoon, in steep gorge country, where Billy Bulloo's Canyon has been named after Bulloo. In the canyon are aged axe-grinding grooves that tell of Aboriginal people's presence in the district prior to first contact with non-Indigenous people.[155] A local man, born over a decade after Bulloo's death, recalls in his memoir that Bulloo had been in the possession of several nuggets, weighing a few ounces each, that had the appearance of having been chipped off a larger nugget, or reef, by Bulloo's tomahawk. [156] Over the years, as Bulloo travelled through Nowra, Terara, Marulan, Berrima, Bungonia and Moruya, settlers would observe his collection of gold specimens and offer Bulloo rum and cash to divulge the location of his gold source, assuming it to be the one locality.[157]

"Other Incidents Connected with Billy Blue", *The Nowra Leader,* September 2, 1932, 1; "The Cedar-Cutter's Goldmine", *The Scrutineer and Berrima District Press,* April 18, 1934, 2; **"**History of the Shoalhaven Area", *South Coast Times and Wollongong Argus,* 7 May 1951, 1.

[152] W. J. Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, (23 February, 1927): 3.

[153] "The Lachlan Tribe", *The Forbes Advocate,* May 28, 1912, 4.

[154] J. H. Sturgiss, *The Man from The Misty Mountains,* Eastwood: The Budawang Committee, 1986, 141.

[155] S. Feary and H. Moorcroft, "An Indigenous Cultural Heritage Management Plan for the the Bundanon Trust Properties, https://bundanon.s3.amazonaws.com/uploads/files/an_indigenous_cultural_heritage_management_plan_for_the_bundanon_trust_properties.pdf, August 2011, 21.

[156] Sturgiss, *The Man from The Misty Mountains*.

[157] Sturgiss, *The Man from The Misty Mountains*, 141-142; W. J. Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3. "News and notes", *The Shoalhaven Telegraph,* April 20, 1904, 11; "Strange Coincidence, Southern Cloud Mystery and the Cedar-Cutters' Gold Mine," *The Scrutineer and Berrima District Press*, April 18, 1934, 2.

Through the years, drovers have regaled stories of 'Billy Blue's Reef' around campfires, sheep men have repeated the tales and soldiers, resting near bivouac fires, have retold Bulloo's tale by the Sphinx.[158] Aboriginal people from Galari Bila, or Lachlan River, set off in search of Bulloo's gold as word travelled to those of the Wiradjuri nation, while rumours persistently rumbled through the local Shoalhaven community concerning the legendary reef's location.[159] Many dedicated years to their search, some invoking clairvoyants to aid their pursuit.[160] Local farmer Fred Haslem sold his land and over six years spent the proceeds in his fruitless search.[161] These stories have enthralled the local municipality and different versions of these tales are still told by gold-seekers today.[162]

Billy Bulloo cashed a gold nugget at a store in Bungonia.[163] Later, Bulloo and his group camped nearby, having purchased tobacco, flour, tea and sugar. Bulloo then returned to cash in other nugget of gold. These events are credited as being the beginnings of Bulloo's reputation.[164] Bulloo's traded specimens were described in several newspaper articles as consisting of more gold than quartz.[165] Keeping readers enthralled, various newspaper

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[158] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.
[159] "The Lachlan Tribe", *The Forbes Advocate,* May 28, 1912, 4.
[160] "The Lachlan Tribe", 4.
[161] "The Southern Cloud Mystery and that Lost Goldmine", *The Scrutineer and Berrima District Press,* May 23, 1934, 2.
[162] Gold Detecting and Prospecting Forum, "The Legend of Billy Blue and the 'Lost Gold Reef'", https://golddetecting.forumotion.net/t6669-the-legend-of-billy-blue-and-the-lost-gold-reef; Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, 23 February 1927, 3; "The Lachlan Tribe", *The Forbes Advocate,* May 28, 1912, 4.
[163] P. Prineas, "Wild Places: Wilderness in Eastern New South Wales", *The Colong Foundation for Wilderness Limited,* Sydney: Kalianna Press, (1997) 73.
[164] Prineas, "Wild Places", 73.
[165] *Nowra Colonist*, October 11, 1899, 2, as detailed in Bennett, "The economics of fishing," 85-99; "News and notes", *The Shoalhaven Telegraph,* 20 April 1904, 11.

articles[166] over the decades recount Bulloo as having sold pure gold,[167] traded in lumps,[168] or in lots of several ounces[169] or as gold dust[170].

Henry Moss and Billy Bulloo formed a good relationship. Moss, well regarded and trusted by the local Shoalhaven Aboriginal people, was considered to have Bulloo's confidence. Bulloo was seen at Moss's inn selling Moss lumps of quartz many times. Henry Moss's son confirmed that his father, referred to in Aboriginal oral histories as 'the publican in Nowra'[171], received lumps of auriferous quartz from Bulloo.[172] Bulloo was known to go away for a time, as local residents speculated he was headed up the Shoalhaven River, only to later return to Terara to meet with Moss to trade pieces of quartz and small amounts of gold. Bulloo also traded gold to storekeepers in other towns. In 1921, a writer for the *Smith's Weekly* offered further conjecture that Bulloo had headed to rough country between the Nerringa Mines and Yalwal Goldfield during his absences.[173]

In the grip of gold-fever, local witnesses who saw Billy Bulloo trade Henry Moss pieces of quartz, believed it to be auriferous quartz, most likely due to Bulloo's reputation for trading

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[166] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3; Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly*, October 27, 1923, 19; "News and notes", *The Shoalhaven Telegraph,* 20 April 1904, 11.
[167] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.
[168] Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly*, October 27, 1923, 19; "Billy Blue's Gold A Mystery", *South Coast Register*, last updated 19 June 2018, https://www.southcoastregister.com.au/story/5477039/billy-blues-gold-a-mystery/ 2020
[169] "News and notes", *The Shoalhaven Telegraph*, 20 April 1904, 11.
[170] "News and notes", 20 April 1904, 11.
[171] "The Gold of Billy Bulloo", *The Bulletin,* 77: 3978 (May 9, 1956): 30; R. Robinson, *The nearest the white man gets: Aboriginal narrative and poems of New South Wales collected by Roland Robinson*, Sydney: Hale and Iremonger Pty Ltd, 1989, 41-42.
[172] "The Southern Cloud Mystery and that Lost Goldmine", *The Scrutineer and Berrima District Press,* May 23, 1934, 2. "Billy Blue's Reef: Was it gold hidden by bushrangers? The belief of an old local resident,", *The Nowra Leader,* September 2, 1932.
[173] Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly,* October 27, 1923, 19; Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3; "News and notes", *The Shoalhaven Telegraph,* 20 April 1904, 11; "The Southern Cloud Mystery and that Lost Goldmine", *The Scrutineer and Berrima District Press,* May 23, 1934, 2.

gold. Moss was known for his mining exploits and the assumption that the quartz Bulloo was trading was gold bearing would have been a natural conclusion. However, auriferous quartz differs greatly from the many descriptions available of the gold Bulloo offered for trade. Bulloo was noted to have traded pure gold with tomahawk marks on the surface edges. Crystallised alum, however, is very similar in appearance to quartz. In addition to providing Moss with samples of gold, as an enterprising and experienced trader, Bulloo may have been the source of some, or all, of Moss's numerous alum crystals. Regardless, Moss and Bulloo's relationship provides further evidence Moss obtained geological specimens from Aboriginal people.[174]

It should be noted Henry Moss had no need to purchase auriferous quartz from Billy Bulloo. Moss was well known in the Shoalhaven area for his geological survey of the district. In Reverend W. B. Clarke's *Researches in the Southern Goldfields of New South Wales*[175], Clarke highly commended Moss for his contributions to the cause of science, praising Moss's zeal and energy.[176] As early as 1859, Henry Moss knew of the location of quartz in the Shoalhaven area.[177] Dr George Underwood Alley stated in 1861 that for several years Moss had shown a great interest in gold digging, and 'often risked his life climbing mountains, swimming rivers, and exposing himself to wet and cold for months, prospecting the gullies and acquainting himself with the district'[178]. In June 1861, Moss presented

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[174] Sturgiss, *The Man from The Misty Mountains,* 141-142; "The Southern Cloud Mystery and that Lost Goldmine", *The Scrutineer and Berrima District Press,* May 23, 1934, 2; G. Nicholls. "On The Gold Trail: Jacks-of-all-trades Fossick." *The Sydney Morning Herald,* June 26, 1931, 10.
[175] Rev. W. B. Clarke, *Researches In The Southern Goldfields of New South* Wales, Sydney: Reading and Wellbank, 1860. This book compiled Clarke's reports from the southern goldfields of 1851-1852. The second edition included an addendum, and Clarke's writings on geology and weather.
[176] Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly*, October 27, 1923, 19; "Obituary", *The Shoalhaven Telegraph,* September 21, 1887, 2; A. Mozley, "Clarke, William Branwhite (1798-1878)", *Australian Dictionary of Biography*, Vol 3., MUP, 1969, adb.anu.edu.au/biography/clarke-william-branwhite-3228
[177] "The Road To Shoalhaven", *The Goulburn Herald,* June 16, 1860, 4.
[178] "Shoalhaven. From our correspondent: Public Meeting.", *Illawarra Mercury,* October 18, 1861, 2.

samples of auriferous quartz to the commissioners organising 1862's London International Exhibition.[179] One of Moss's obituaries, published in *The Shoalhaven Telegraph* in September 1887, states

> until his late illness overtook him, Mr Moss was a constant contributor to our knowledge of the geology and mineralogy of the Shoalhaven district. He was in constant communication with the Department of Mines: and by his aid and advice many "prospecting" miners were enabled to obtain serviceable advice as to the value of discoveries of quartz reefs…[180].

Further, in 1872 Moss was in the process of taking up a mineral lease at Nerriga to mine tin he had found. Moss and Company were at this time 30 feet down mining their quartz reef and were endeavouring to send samples of quartz to the Mint to be tested. Moss and Company's claim was 30 feet deep and 30 feet wide and described as almost a quarry[181].

Henry Moss knew Billy Bulloo had no hidden gold reef to tell of and attempted to disillusion those desperate to learn of its location from seeking it further. Moss was, from the mid-1850s until his death, the definitive source of Shoalhaven mineralogical information. Moss's repeated assertions of the non-existence of the reef only seemed to convince gold-seekers Moss not only knew the location of Bulloo's stock of gold but that Moss intended to hoard it for himself.[182] Those who knew Moss would never have made such an assumption. During Moss's exploration of the Shoalhaven, he found several flecks of coarse gold in Bundanoon and in various local creeks. In early 1860, one sample Moss obtained from Bundanoon Creek, situated between the Shoalhaven River and Morlya Mountain, was considered to have been

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[179] "Shoalhaven", *Empire,* June 7, 1862, 5.
[180] "Obituary", *The Shoalhaven Telegraph,* September 21, 1887, 2.
[181] "Mining News", *The Sydney Morning Herald,* September 2, 1879, 2.
[182] "The Lure of Shoalhaven Gold: A True Story Of Billy Blue's Reef", *The Nowra Leader,* January 28, 1938, 1; "Billy Blue's Reef: A True Story of the Lure of Shoalhaven Gold", *Robertson Mail,* April 6, 1928; "Obituary", *The Shoalhaven Telegraph,* September 21, 1887, 2.

indicative of a paying field.[183] Rather than keep this information to himself, Moss made his find known. In 1879 Moss, rather than edge out other local gold-seekers, petitioned the Department of Mines in relation to establishing a Yalwal Common for the use of miners seeking gold in the area.[184]

A writer for *The Southern Mail* speculated Billy Bulloo's gold mine was only to be 'found in the fertile imagination of the whites'.[185] Convinced Bulloo knew the location of a pure gold outcrop, settlers begged Bulloo to share his knowledge with them.

> When the truth of the situation dawned on [Bulloo], he naturally enough assumed an air of stolid mystery, accepting meanwhile all the libations of rum and contributions of cash that were lavished on him; all in the vain hope that he would disclose the whereabouts of the reef. When asked the location of his finds, [Bulloo] would always exclaim, "Can't mention!"[186].
>
> After a visit to town, [Bulloo] would never follow the same path of return, setting off in an entirely different direction from whence he had come, careful his route was unobserved. For liquid and monetary consideration Billy would consent to lead an expedition, such expedition would set out in good order, only to find that friend [Bulloo] was missing from the first night's camp[187].

When an absolutely dripping wet Billy Bulloo was sighted at Marulan, it caused a buzz of speculation that Bulloo's secret gold reef was to be reached by way of a subterranean swim

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[183] "New South Wales Summary", *The Armidale Express and New England General Advertiser*, January 7, 1860, 3.
[184] "New South Wales Summary", 3; "Local Intelligence: Yalwal Common", *The Telegraph and Shoalhaven Advertiser,* May 29, 1879, 2.
[185] "The Lure of Shoalhaven Gold: A True Story Of Billy Blue's Reef", *The Nowra Leader,* January 28, 1938, 3.
[186] "News and notes", *The Shoalhaven Telegraph, 20* April 1904, 11.
[187] "Billy Blue's Reef: A True Story of the Lure of Shoalhaven Gold", *Robertson Mail,* April 6, 1928; see also "News and notes", *The Shoalhaven Telegraph*, 20 April 1904, 11.

into secret caverns. The local gold-seekers quickly obtained diving suits for underwater exploration. When members of Bulloo's kinship group were asked about Bulloo's wet clothes, one man reported it was a premeditated performance of Bulloo's, set in play to make the non-Indigenous believe he had obtained his gold from the river.[188]

Surreptitious colonisers and the best bushman alike had attempted to follow Billy Bulloo into the bush 'times innumerable'[189], all hoping to discover the location of Bulloo's gold. Aware he was being followed, Bulloo was known to disappear somewhere along the track. Dr Woolfe, a geologist and prospector, along with two other prospectors, a man called Breiss[190] and Jack Beasley, of Yalwal, once attempted to shadow Bulloo. Bulloo, about a mile from Little Horseshoe Bend, told the men to tie up their horses. Bulloo said, "Follow me now", and led the men to the edge of a cliff before exclaiming with a shout, "Come on; you bin find-em long-a me," at which point, Bulloo took a leap and jumped. Running to where he had been, these three men saw only a sheer 200-foot drop and no sign of Bulloo, who had vanished yet again.[191] The group later returned to the cliff drop with ropes and equipment procured at Yalwal, and Dr Woolfe attempted being lowered down the sheer drop. A writer for the *Newcastle Morning Herald and Miner's Advocate* reported in December 1928 that Dr Woolfe:

> found it to be so precipitous and dangerous that he asked to be hauled back. But for the climbing pick which he carried, his helpers could never have hauled him up again. Many attempts were made to get into this gully, but all failed. Two days after, while

[188] Sturgiss, *The Man from The Misty Mountains*, 141-142; Prineas, "Wild Places", 73.
[189] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.
[190] This name is reported *Dreiss*, in Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly,* October 27, 1923, 19.
[191] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3; Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly,* October 27, 1923, 19. "Aboriginal Gold Mine: Unsolved Nowra Mystery", *Newcastle Morning Herald and Miners Advocate*, December 28, 1928, 6.

> the doctor and his friends were still searching, Billy [Bulloo] and his tribe returned to Nowra with a fresh supply of gold![192]

Dr Woolfe's group searched for a month before they abandoned their search, having had no success. Jack Beasley approached Bulloo down offering him £100 for the location of his source of gold. Bulloo declined Beasley's offer, replying, "You bin walk along-a my track, you find-em all right".[193] Others would get members of Bulloo's kinsfolk drunk in the hopes they would part with the location of Bulloo's source of the yellow metal.[194]

In April 1934 a writer for *The Scrutineer and Berrima District Press* speculated:

> The [A]boriginal's mine may be in the bed of Bundanoon Creek about three-quarters of a mile above Tallowa Creek where the rocks are all on edge, like leaves of a book, and extend across the bed of the creek. Such rock formation is recognised as being favourable for auriferous bearing. The spaces between these rocks are hardly wide enough to permit of safe walking across, and are very dangerous in places. The [A]boriginal may have made his discovery in a dry season when there was very little water in the bed of the creek and chipped it off the rock with a tomahawk. At any rate, the gold and specimens he brought in showed the tomahawk marks and were very wet.[195]

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[192] "Aboriginal Gold Mine: Unsolved Nowra Mystery", *Newcastle Morning Herald and Miners Advocate*, December 28, 1928, 6.
[193] Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly* October 27, 1923, 19. See also: "Aboriginal Gold Mine: Unsolved Nowra Mystery", *Newcastle Morning Herald and Miners Advocate*, December 28, 1928, 6.
[194] "Australiana", *The World News,* August 29, 1953, 32.
[195] "The Cedar-Cutter's Goldmine", *The Scrutineer and Berrima District Press*, April 18, 1934, 2.

According to this writer, Billy Bulloo was the king of the Bong Bong and during the late 1860s Bulloo spent most of his time at Foster's Camp[196], only departing for short periods to obtain further supplies of gold.[197]

Henry Moss and Billy Bulloo's relationship is recorded in perhaps one of the most well-known Aboriginal oral histories from the Shoalhaven River, which today is documented in differing forms in various publications:[198]

> Old Billy Bulloo was a clever old man.
>
> He had three wives.
>
> He'd never go out fishing on a calm day.
>
> But if the sea was rough – mountains
>
> high – he would jump in his canoe
>
> and get his fish by spearin' em.
>
> A mullet, he never travels in the calm.
>
> He waits for the wind to blow a gale.
>
> Soon as ever he feels that wind on him –
>
> cold –he jumps out of the water.
>
> He's feeling for that westerly wind.

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[196] Foster's Camp, also known as Cables Sliding and later Penrose, is located between Wingello and Bundanoon. The Penrose railway station in southern New South Wales was opened in 1869, at that time named Cables Siding. Source for this info?

[197] "The Cedar-Cutter's Goldmine", *The Scrutineer and Berrima District Press,* April 18, 1934, 2; "Aboriginal Heritage", "Bong Bong Common: a rare and special place". *Bong Bong Common Management Committee.,* (2019), www.bongbongcommon.org.au/aboriginal-heritage/

[198] S. Feary and H. Moorcroft. An Indigenous Cultural Heritage Management Plan for the Bundanon Trust Properties, August 2011, 21, https://www.bundanon.com.au/wp-content/uploads/2021/03/Indigenous-Cultural-Heritage-Management-Plan.pdf; Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly*, October 27, 1923, 19. Percy Mumbulla, "The Gold of Billy Bulloo," recorded by Roland Robinson and reproduced in R. Robinson. *The nearest the white man gets: Aboriginal narratives and poems of New South Wales collected by Roland Robinson*, Sydney: Hale and Iremonger, 1989, 41, see also https://www.austlit.edu.au/austlit/page/C101080.

When that wind blows you see the water

black with leapin' mullet, thousands

an' thousands of leaping mullet.

That's when old Billy Bulloo used to get his fish.

Old Billy Bulloo used to travel across-country to the Burragorang Valley tribe.

Old Billy Bulloo found the gold on the Shoalhaven.

He used to come down with enough to get tucker for four or five weeks.

He would go to the publican in Nowra an' trade his gold

For tucker or a bottle of rum.

Lots of white men tried to find out where he got the gold.

But when he got to the bush he'd lose them.

They never found out where he got the gold.

The last of my people he told

Was my old granny.

While she was in her health and' strength,

She wanted to take us out an' show us

Where it was. But you know

What young fellers is – they're here

Today an' gone tomorrer[199]

Henry Moss, referred to in this oral history as 'the publican in Nowra', was renown as a moral hotelier. Over the many years Moss held a license at The Central Hotel, he never opened his doors, except in the case of absolute necessity, on either the Jewish or the

[199] Mumbulla, "The Gold of Billy Bulloo".

Christian Sabbath and unswervingly rejected the money of habitual drunks. Those known to be irresponsible financially would also be refused service at The Central Hotel. In September 1887, a writer for *The Kiama Independent and Shoalhaven Advertiser* affirmed,

> it was notorious that no man under the influence of drink could add to his delirium at the 'Central', nor carry aught away with him that would increase his risk of accident. This was a consistent and abiding principle of the house – which Mr. and Mrs. Moss were honoured by all – and one in which their practise merits the largest commendation.[200]

Years after his father's passing, Henry Moss's son, Cyrus Saul Moss, who, like his parents, was a prominent and highly regarded Nowra resident, asserted that rumours of 'Billy Blue's gold reef' were pure imagination.[201] Billy and Fanny Bulloo evidence that Aboriginal people of the Shoalhaven were acutely aware of the minerals available in their immediate environment and of the colonisers' desire to obtain them. Billy Bulloo's 'story about gold mining demonstrates Aboriginal people's capacity to adapt to the events of colonial history by incorporating them into traditional story telling'.[202]

Years after both Billy Bulloo and Henry Moss had passed away,[203] gold-hunters would still visit Moss's inn demanding his relatives divulge the location of 'Billy Blue's Reef', scorning any suggestion that the reef did not exist.[204] It was likely the same people that also

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[200] "The Late Henry Moss", *The Kiama Independent and Shoalhaven Advertiser,* September 23, 1887, 2.
[201] "Other incidents connected with Billy Blue", *The Nowra Leader,* September 2, 1932, 1.
[202] Feary and Moorcroft, An Indigenous Cultural Heritage Management Plan.
[203] Billy Blue died in 1868; and Henry Moss died in 1887, see "Town and Country", *Sydney Mail,* September 26, 1868, 5 and "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2; W. J. Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.
[204] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.

approached Bulloo's widow, Fanny. Billy Bulloo's widow, Fanny[205] many times divulged the secret location of her beloved's reef for a fig of tobacco, which resulted in 'the fervid curses of many disappointed gold-seekers'.[206] Perhaps Fanny realised, as had her husband had, that she need not want for anything with so many victims of gold-fever more than willing to supply her needs for the promise of a worthwhile find. Bulloo's kinship group had no knowledge of the fabled reef's location, nor did they confirm the reef existed. Locals eventually came to believe Bulloo had taken any knowledge he possessed with him.[207]

According to a local man[208] Billy Bulloo was buried at Burrier, near the Yawal goldfields, under a gum tree on the 'Thomson Estate'[209] however Billy Bulloo's death notice, which appeared in *Town and Country* on 26 September 1868, as reported by *Herald's* Sutton Forest correspondent, contradicts the local man's account,

> DEATH OF BILLY [BULOO].—An [A]boriginal, well-known in the Sutton Forest district, one of the Bong Bong tribe, aged about 60, died last week, apparently from dropsy; he, as well as his widow Fanny, with two or three more blacks, were employed by Mr. John Morrice, M.L.A., at Broulee, burning off. The remains of poor Billy were placed in a decent coffin, and buried, with permission, in the Church of England burial ground, which was deemed a great honour, and gratitude was evinced

[205] Elsewhere, Billy's wife is recorded as 'Lizzie', see J. Rumsey, "Land of Opportunity", *The Farmer and Settler,* May 13, 1919, 3.
[206] Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.
[207] Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly*, October 27, 1923, 19; Morton, "The Lure of Shoalhaven Gold. The True Story of Billy Blue's Reef", *Crookwell Gazette*, February 23, 1927, 3.
[208] Sturgiss, *The Man from The Misty Mountains*, 141-142.
[209] Sturgiss, *The Man from The Misty Mountains,* 141-142; "The Devil is in that Moon for Mischief", *Illawarra Mercury,* March 24, 1856, 4; "Local Intelligence", *The Shoalhaven Telegraph,* January 31, September 4 and October 30, 1884. This property belonged to Nowra solicitor, James Thomson, the grandson of Mary Reiby, the colonial businesswoman and trader memorialised on Australia's $20 note. Thomson ran the horse-breeding and cattle-grazing estate with the help of local Aboriginal people. The relationship between Thomson and Henry Moss was at times adversarial due to their political disagreements, however, after Henry Moss's eldest son, Hyam Moss, completed his university examination he was indentured for five years to Thomson. Hyam Moss became a qualified Attorney, after he had served his five years, see https://www.parliament.nsw.gov.au/members/Pages/member-details.aspx?pk=199.

> by the disconsolate widow and fellow mourners; the former pipe-claying her head and round her legs to denote the loss of her husband. These blacks are known to be very honest, and have, for many years, worked for the white people. The Bong Bong blacks have intermarried with those of the Braidwood tribe. The widow says, when they hear of Billy's death, "All the blacks plenty cry, then lots rain come down for my poor old man Billy".[210]

Fanny Bulloo is recorded in the above notice to have undertaken the traditional mourning practice of making a widow's cap, or mourning cap. [Figure 10] These caps were worn by Aboriginal widows during their mourning period. These were fashioned by taking a cast of woven cord, and covering it in a white gypsum clay called kopi by Aboriginal people.[211] Some of these caps were made so well that they have survived 200 years in the harsh environment of the Simpson Desert, having been found by two Wangakurru Elders.[212] These crafted cultural artefacts are 'associated with the early stages of pottery'.[213] Common in New South Wales' West Darling district these helmet-like head coverings are typically crafted from a mixture of burned gypsum (calcium sulphate, or kopi) and ashes.[214]

Some widow's caps would be worn for several months and weighed up to 10-14lbs. Fanny Bulloo, in addition to covering her head in kopi to form her widow's cap, also covered her legs in the calcium sulphate[215] mixture. Kopi, like alum, is a sulphate mineral utilised traditionally by Aboriginal people as a multi-use medicine. Kopi was also used customarily to

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[210] "Town and Country", *Sydney Mail,* September 26, 1868, 5.
[211] Kopi (or copi) is the Aboriginal word for calcium sulphate, or white gypsum, a sulphate mineral, see "Widow's Caps", *The Sydney Mail and New South Wales Advertiser*, July 8, 1899, 95.
[212] Bruce Pascoe, *Dark Emu: Aboriginal Australia and the birth of agriculture*, Broome: Magabala Books Aboriginal Corporation, Broome: 2018, 152.
[213] "Widow's Caps", *The Sydney Mail and New South Wales Advertiser*, July 8, 1899, 95.
[214] T. McCourt, *Aboriginal Artefacts*, Adelaide: Rigby Ltd, 1975, 122.
[215] "Kopi for Clarifying", *Kalgoorlie Miner*, July 18, 1929, 3.

clarify muddy or cloudy water; for painting traditional rock art, for body paint for display in various ceremonies and in sculpting even into the twentieth century.[216]

As the nineteenth century drew to a close, Aboriginal people endeavoured to hide widow's caps in an effort to prevent their theft by those colonists' intent on collecting such artefacts.[217] Interest in collecting these cultural items did not wane in the twentieth century. A writer for *The Murrumbidgee Irrigator* in April 1940 stated a 'truck load of rocks and stones,' including a widow's cap and conical shaped ceremonial stones,[218] had been transported from the Darling River region by collectors.[219] Kopi was not only used to form widow's caps, calcium sulphate was also often used to manufacture cylindro-conical or cornuted stones. Some of these manufactured kopi stones were decorated with markings such as emu's tracks, crosses and kangaroo tracks. These are believed by some to be funeral chronicle stones; their markings evidence their use in keeping burial records.[220] A non-Indigenous observer recalled,

> When I first saw these, I made the mistake of doing what many others have done, and referred to them as 'grave markers'. However, when I showed them to an old Aboriginal by the name of Nayland, he said that his ancestors made them to resemble emu eggs and would 'sing' them at a ceremony which was supposed to start the emus nesting.[221]

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[216] "Kopi for Clarifying", *Kalgoorlie Miner,* July 18, 1929, 3; "Aboriginal Implements: Cylindro, Conical or Cornute Stones and Widow's Caps", *The Beaudesert Times*, March 2, 1934, 4; S. L'Oste-Brown and L. Godwin, "'Living Under the Act'"; M. J. Rowland. "Geophagy: an assessment of implications for the development of Australian Indigenous plant processing technologies". *Australian Aboriginal Studies* 1. (2002): 55; "Aboriginal Woman Sculptor", *Tweed Daily,* January 6, 1937, 3.
[217] "Widow's Caps", *The Sydney Mail and New South Wales Advertiser,* July 8, 1899, 95.
[218] Mr Black, a collector, noted widow's caps are only found in the areas where cylindro-conical stones are also found, see "Aborigines", *The Australasian*, November 11, 1933, 44.
[219] "Aboriginal Relics", *The Murrimbidgee Irrigator,* April 2, 1940, 2.
[220] "A Few Notes On Burial", *Mourning Rites of the Aborigines of New South Wales*, January 29, 1902, 2.
[221] McCourt, *Aboriginal Artefacts*, 125.

Although their shape had cultural significance, emu egg shaped - or cylindro-conical shaped – manufactured 'stones' would have made the calcium sulphate portable.[222] This portability would have been ideal for having the calcium sulphate on hand for medicinal use, or for use in clearing muddied water, as needed.

The Wonkanguru, from the north-east of Lake Eyre, used kopi as a ceremonial chest paint to represent ashes. Covering oneself symbolically earth or ashes is present in the funeral rites and mourning processes of other cultures funeral rites and mourning processes.[223] The Hebrew word 'ashes' (אֵפֶר; *efer*) is the ultimate symbol of ruin and desolation. As described by the University of Pennsylvania's Prof. Morris Jastrow Jnr in 1899:

> Among the ceremonies observed by the ancient Hebrews in mourning and also as signs of distress or deep grief, the placing of earth, or dust on the head, and different uses of ashes, are peculiarly interesting.[224]

Despite this Aboriginal custom's similarity to other ancient cultures' mourning practices, the colonists regarded the manufacture of widow's caps generally as an oddity and a curiosity. Prof. Jastrow found additional evidence of dust and earth being used in the funeral customs of the Semites, Egyptians and Greeks.[225]

Mickey Johnston

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[222] A writer for *The Beaudesert Times* in March 1934 noted the late Dr McGillivray of Broken Hill was an avid collector of Aboriginal cultural stones. The writer noted the stones McGillivray collected had been connected in shape to similar finds in Africa, Syria and tombs in Egypt. See "Aboriginal Implements: Cylindro, Conical or Cornute Stones and Widow's Caps", *The Beaudesert Times*, March 2, 1934, 4.
[223] See 2 Samuel 8:19; Esther 4:11 (explain the edition of the Bible that you are using, eg. King James Bible – don't assume readers will know this) for examples of similar traditional Jewish cultural funeral rites.
[224] M. Jastrow, Jnr. "Dust, Earth and Ashes as Symbols of Mourning among the Ancient Hebrews", *Journal of the American Oriental Society* 20, (1899): 133-150.
[225] Jastrow, Jnr, "Dust, Earth and Ashes as Symbols of Mourning", 133-150.

Another well-known Aboriginal man living in the Shoalhaven during this period, Mickey Johnston[226], was born on Worimi country – the traditional manufacturing site of Aboriginal alum crystals. [See Figure 9] Johnston actively worked as a miner during his lifetime and was well-known in the Shoalhaven community. Johnston came to be known has 'King Mickey head of the Illawarra Aboriginals'[227] in his later years, despite originating from the New South Wales mid-North coast.[228] Henry and Sarah Moss's son, C. S. Moss, photographed Mickey Johnston on several occasions. Two albums of C. S. Moss's photographic work are held by the Nowra Museum, and several portraits of Mickey Johnston, as photographed by Mickey Johnston, can be viewed online at the State Library of NSW.[229] Although these photographs are dated circa 1910, the portraits of Mickey Johnston logically pre-date this by several years, given Johnston passed away in 1906.

Mickey Johnston was born in 1834 in Port Stephens.[230] This would likely have made Johnston a Worimi man,[231] although some records state Johnston hailed from the Clarence River.[232] As a young Worimi man, Johnston would have likely been aware that Bulahdelah Mountain was the source of the Worimi alum workshop, manufacturing valuable traditional medicine for use and trade.

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[226] Also spelt, Johnson. Mickey Johnston was also known as Tiger, Mickie Weston and King Mickey.
[227] "King Mickey", *Illawarra Mercury*, November 9, 1906, 2.
[228] Drayton, "Where was 'Billy Blue's' find?", *Smith's Weekly,* October 27, 1923, 19; "Strange Coincidence, Southern Cloud Mystery and the Cedar-Cutters' Gold Mine", *The Nowra Leader*, March 30, 1934.
[229] See sl.nsw.gov.au/collection-items/mickey-johnson-bush-shoalhaven-scenes-and-people-ca-1910 and https://search.sl.nsw.gov.au/permalink/f/1ocrdrt/ADLIB110364487 photographs numbers 17, 36, 65
[230] M. K. Organ, "Illawarra and South Coast Aborigines 1770-1850", *Aboriginal Education Unit*, University of Wollongong, 1990.
[231] M. K. Organ, "Illawarra and South Coast Aborigines 1770-1850", *Aboriginal Education Unit*, University of Wollongong, 1990, xviii, 303 and 324; see also Shellharbour City Museum, Shellharbour Local History, People, "Mickey and Rosie Johnston", museum.shellharbour.nsw.gov.au/mickey-rosie-johnston/. Johnston's father is listed on his death certificate as Yanby. As Yanby may also be spelt Yanbee, some have speculated that due to this, Johnston was instead from Yamba, see Simon Ross' notes at https://www.wikitree.com/wiki/Johnson-82189, last accessed Friday 3 February 2023.
[232] "King Mickey", *Illawarra Mercury*, November 9, 1906, 2. This could be due to the fact Weston was returning from the Clarence district when he obtained ten-year-old Johnston.

In manuscript memoir by Major Edward Henry Weston, Weston described acquiring a ten-year-old Johnston, from Johnston's father upon leaving the Clarence area on his way back south.[233] Weston 'openly admitted having brought King Mickey to Illawarra claiming to have traded a blue serge shirt with Mickey's father for possession of the youngster'.[234] If the dates and ages in Weston's account are reliable, Weston would have acquired Johnston around 1844.[235] Weston's father, Captain George Edward Nicholas Weston, may have negotiated the transaction involving the trade of a shirt for Young Mickey, as the younger Weston would have only been eleven years old in 1844.[236] How optional entering into this negotiation would have seemed for Young Mickey's guardian is debatable. It is likely Weston's party were armed with rifles.[237]

Major E. H. Weston states that when he acquired Young Mickey he was named 'Tiger', and that the young boy's 'father appeared quite pleased with the transaction'.[238] However,

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[233] Published, in part, in the Illawarra Historical Society's July 1976 bulletin, the unpublished manuscript is held in Wollongong City Library Local Studies Collection. Major E. H. Weston's assertion of how he acquired young Mickey Johnston/Johnson appears in his unpublished manuscript, "Reminiscences of an Australian Pioneer," held in Wollongong City Library Local Studies Collection. Weston held property at Albion Park. Weston lived with his parents on the property 'Horsley' at Prospect, later settling at 'Macquarie Gift', Albion Park after marrying his first cousin, Esther Johnston in 1858. Weston relocated to 'The Meadows' in the Illawarra c.1860-1865. See Shellharbour Museum's website for further information museum.shellharbour.nsw.gov.au.

[234] Joseph L. Davis, "The Aborigines of Jamberoo described by the remarkable Kiama engineer, coal geologist, millwright and surveyor John Taylor." 2020, 32, https://www.academia.edu/43353719/THE_ABORIGINES_OF_JAMBEROO_DESCRIBED_BY_THE_REMARKABLE_KIAMA_ENGINEER_COAL_GEOLOGIST_MILLWRIGHT_AND_SURVEYOR_JOHN_TAYLOR. more details on this source would be helpful, ie when originally published, also check the link. See also Joseph L. Davis, "Lake Illawarra: an ongoing history", *Lake Illawarra Authority Report*, 2007, 47.

[235] M. Bennett, For a Labourer Worthy of His Hire: Aboriginal Economic Responses to Colonisation in the Illawarra and Shoalhaven, 1770-1900, Vol.1., PhD thesis, University of Canberra, 2003, 224, states "Weston took up land at Albion Park in 1865 after arriving from the Clarence River". Weston may have taken a trip to the Clarence prior to his taking over the Johnston property at Albion Park, but newspaper evidence shows Weston was in the Sydney/Illawarra area in the late 1850s-early 1860s. Weston was breeding horses at Prospect in the early 1860s, see "Agricultural Society's Exhibition", *Empire,* April 25, 1861, 8; attending meetings of the Australian Jockey Club in metropolitan Sydney in 1858, see "The Turf", *Bell's Life in Sydney and Sporting Reviewer*, February 13, 1858, 2.

[236] The birth certificate for Edward H. Weston is registered in NSW in 1833 (413/1833 V183341318).

[237] F. McCaffrey. *The History of the Illawarra and its Pioneers,* Sydney: John Sands Ltd, 1922, 148-149. The Westons were miliary men and that even in retirement, rifles were in regular use for Captain Weston 'kept a pack of hounds, and hunted in the good English style'.

[238] M. K. Organ, "Illawarra and South Coast Aborigines 1770-1850", *Aboriginal Education Unit*, University of Wollongong, 1990, 318.

Weston may have mistaken the word '*tingar*' for the young boy's name. Yanby[239], Mickey Johnston's father, may have been pointing to his son, asking for money as trade. It is interesting to note that in the Gathang language of the Worimi people, *tingar* [or *dingar, dhinggarr*] is the word for money.[240]. Yanby may have repeated *tingar* in his interactions with Weston, asking for money and may have even pointed to the boy, leading Weston to mistakenly assumed *tiger* was the young boy's name. Mickey Johnston strongly disliked the name 'Tiger' and asked to be referred to as Mickey as soon as he gained independence from Weston[241]. Johnston may have adopted the name 'Mickey' from an old Aboriginal Elder named Micky Nuninama, who was a leader of the Illawarra Aboriginal people and familiar with the land the Weston family worked in the Illawarra[242].

From the early days of colonisation there is evidence of trade in Aboriginal children and adolescents. From the Kimberly region there is evidence of an Aboriginal child being brought to the area after having been bought for a tin of jam. Children were often transported far away from where they were born and sometimes traded to other colonists. [243] It was not unusual after punitive military expeditions for children to be taken from their communities to be used for labour or as servants by the colonists who removed them.[244]

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[239] Yanby is the name that appears on Mickey Johnston's death certificate under 'father's name' (NSW: 12864/1906) however some records (see https://www.wikitree.com/wiki/Johnson-82189) state Johnston's father's name as 'Tommy'.
[240] *Mitji nguka dhinggarr!* translates, Give (me) sixpence! *Warruy nguka djinggarr!* Give (me) a pound!
[241] M. K. Organ, "Illawarra and South Coast Aborigines 1770-1850", *Aboriginal Education Unit*, University of Wollongong, 1990, 318.
[242] F. McCaffrey, *The History of the Illawarra and its Pioneers,* Sydney: John Sands Ltd, 1922, 58.
[243] "Testimony of Mary Durack", see M. Durack, *Sons in the Saddle*, Sydney: Constable and Co, Australia: Hutchinson, 1983; and M. Durack, *Kings in Grass Castles*, Sydney: Constable and Co, 1959.
[244] T. Bottoms, *The Conspiracy of Silence: Queensland's frontier killing-times*, Crows Nest: Allen and Unwin, 2014.

Mickey Johnston, as Weston's servant, moved with him during his years of service. 'Prior to Edward H. Weston settling in the Illawarra, he was married to his cousin.'[245] Weston married his first cousin Esther Johnston in 1858, after which Weston moved from the family's estate at Prospect to the south coast's Yallah.[246] At Yallah, Weston resided on 1,500 property called 'Macquarie Gift' situated on Macquarie Rivulet, later renamed 'Johnston's Meadows'.[247] The Aboriginal name for 'Johnston's Meadows' was Tupma, and Johnston's Creek was 'Yarra Yarra'[248]. 'Macquarie Gift' was one of the first land grants in the Illawarra, granted to Major Johnston on 24 January 1817. Although it is believed Johnston arrived in the Illawarra with Weston, at the time Johnston began his servitude to Weston, Weston's father had other servants living on the Illawarra property making it possible Johnston was working in the Illawarra shortly after being removed from his community in 1844.[249]

Mickey Johnston worked for Major E. H. Weston for around a decade after Weston's arrival on the New South Wales south coast. 'Mickey Johnston worked at various jobs for Major Weston including droving horses from the Illawarra to the Murrumbidgee in the late 1860s'.[250] 'In their written agreements as servants [Aboriginal people] often stipulate for a certain number of days in order to visit their tribe'.[251] It is not known if Johnston ever secured such an agreement from Weston or if he was able to travel north back to Country. In 1869 Johnston married Rosannah Russell, a Dharawal/Wodi Wodi woman known as Rosie[252], at

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[245] F. McCaffrey, *The History of the Illawarra and its Pioneers,* Sydney: John Sands Ltd, 1922, 24.
[246] "A Story Of Early Land Settlement In Illawarra", *Illawarra Mercury,* 1934, 10.
[247] B. Lindsay, M. K. Organ, and A. P. Doyle, "Early Land Settlement in Illawarra 1804 – 1861", *University of Wollongong*, (1994), Ch.5. retrieved from ro.uow.edu.au/asdpapers/101 This book was originally published as Organ, MK and Doyle, AP (eds), Early Land Settlement in Illawarra 1804-1861 by Benjamin Lindsay, Illawarra Historical Publications, 1994.
[248] McCaffrey, *The History of the Illawarra and its Pioneers,* Sydney: John Sands Ltd, 1922, 61.
[249] "Untitled", *The Sydney Morning Herald*, March 9, 1848, 2.
[250] Bennett, For a Labourer Worthy of His Hire, 224.
[251] J. F. Mann, "Notes on the Aborigines of Australia", III, *The Sydney Mail and New South Wales Advertiser,* October 6, 1883, 640.
[252] Also known as Rose or Rosey.

Gerringong, around 30kms from Nowra. Weston stated that Johnston 'finally went off and joined the local tribe of blacks in Illawarra, and being a very strong and muscular chap soon took command, and as he did not like the name of Tiger he was known far and wide as King Mickey'.[253]

When Mickey Johnston and Henry Moss first met is not known, however they almost certainly interacted many times. Johnston was considered a man who 'knew and was known by almost everybody throughout the length and breadth of the South Coast, and being of a very gentlemanly nature was well liked'.[254] Moss's son, Cyrus Saul Moss took several photographic portraits of Mickey Johnston at the beginning of the twentieth century. Mickey Johnston[255] held one of two Aboriginal fishing boats held at Wollongong in 1876. In 1876 the Shoalhaven Aboriginal people had been issued only one boat that was held by an Aboriginal man referred to as Fisherman Johnny.[256] Moss supported an Aboriginal man named Roger[257] to successfully petition the government for an additional boat for the Shoalhaven in 1879. Henry Moss's help allowed many south coast Aboriginal people to attain a form of financial independence that lasted many decades.

In Aboriginal Protection Board reports for 1890 and 1891 Aboriginal people were working at a quarry located south of Wollongong. This was the south coast Aboriginal people's

> first connection with the mining industry. It is likely that the people mentioned were working at the Kiama quarry. Barbara Nicholson reports that Mickey Johnston and his

[253] M. K. Organ, "Illawarra and South Coast Aborigines 1770-1850", Aboriginal Education Unit, University of Wollongong, 1990, 318.
[254] "Obituary", *The Kiama Independent and Shoalhaven Telegraph*, November 9, 1906, 2.
[255] Mickey Johnston shared this boat with Paddy Bangalong, see Bennett, For a Labourer Worthy of His Hire, 230.
[256] Bennett, For a Labourer Worthy of His Hire, 230.
[257] Likely Roger of Numba from the 1840 blanket return. Possibly the same man charged with the manslaughter of his wife, circa 1859-60, that has been linked to the Shoalhaven floods of 1860. Bennett, For a Labourer Worthy of His Hire.

> wife, Queen Rosie (her great-grandmother), sometimes lived and worked at the quarry. She is in possession of a death certificate that states one of her ancestors worked with explosives at the Kiama quarry.[258].

In addition to fishing, asserts south coast Aboriginal people held a strategy of selling artefacts and food to obtain additional funds.[259] This provided another opportunity for Henry Moss and Mickey Johnston to interact:

> Aboriginal people of the south coast, as well as La Perouse, sold items to the white residents of the south coast to raise small amounts of cash. An old and unnamed resident of Kiama recalled in approximately 1900 that Aboriginal people once sold boomerangs and brooms made from the Cabbage tree. He dated his observations to the 1830s, but given that he refers to (King) Mickey Johnston in the same paragraph, a date from the 1860s or 1870s is probably more accurate. He said the brooms sold for a price of £0.1.6.[260]

An 'old broom merchant' by the name of Mickey, speculates his father may have been Mickey Nuninama, 'an ancient [A]boriginal, who ruled the destinies of his race in Illawarra' probably because the broom merchant shared his name and his leadership of the Illawarra Aboriginal community.[261] Johnston is remembered today as an Aboriginal leader who used his influence with the non-Aboriginal community to seek out better treatment of Aboriginal people.[262] [See Figure 11]

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[258] Bennett, For a Labourer Worthy of His Hire, 225.
[259] Bennett, For a Labourer Worthy of His Hire, 229.
[260] Bennett, For a Labourer Worthy of His Hire, 229.
[261] McCaffrey, *The History of the Illawarra and its Pioneers,* 58.
[262] C. S. Moss, Shoalhaven scenes and people (c.1910), Manuscripts, Oral History and Pictures Catalogue, ON 436, 949426, Sydney: State Library of New South Wales, incl. administrative and biographical history. https://collection.sl.nsw.gov.au/record/9arpjpKn Image# 949426, see [Figure 11]; "Death of an Aboriginal King", *The Shoalhaven News and South Coast Districts Advertiser*, November 10, 1906, 3; "Death of "King Mickey", *The Sydney Morning Herald*, November 9, 1906, 8; "King Mickey", *Illawarra Mercury*, November 9, 1906, 2; "Obituary", *The Kiama Independent and Shoalhaven Telegraph*, November 9, 1906, 2.

Chapter 8

Henry Moss: the curation of his ethnological collection

"We know we cannot live in the past but the past lives in us."

Charles Perkins

In 1879 Henry Moss submitted samples of boomerangs and specimens of cabbage tree fibre to the Ethnological Court at the Garden Palace, which was held as part of the 1879-80 Sydney International Exhibition. [See Figure 12] Moss noted Aboriginal people used cabbage tree fibre to manufacture brooms and rope.[1] It is likely Moss provided remuneration to the south coast Aboriginal people for the artefacts and specimens he collected over the years. In the 1880s Moss is recorded as having paid cash to the Aboriginal people who manufactured the implements Moss displayed at the Nowra Show.[2]

[1] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*, October 30, 1879, 2.
[2] M. Bennett. For a Labourer Worthy of His Hire: Aboriginal Economic Responses to Colonisation in the Illawarra and Shoalhaven, 1770-1900, Vol.1. Unpublished PhD thesis, University of Canberra, 2003, 261.

> The artefacts that Moss collected demonstrate that Aboriginal people retained the ability to manufacture traditional technology that could be used to maintain economic independence.[3]

At a time of immense cultural upheaval due to colonisation, important traditional items - once utilised for survival - were sold to the colonisers as a means of survival. Items that had once been hidden from the view of the uninitiated found their way into the hands of the colonists. The funds obtained by Aboriginal people from the sale of cultural items at this time would have only provided a supplementary income for their manufacturers.

Probably due to Henry Moss's previous payments to Aboriginal people for artefacts, it was assumed Moss was the likely purchaser of Aboriginal weapons being offered for sale in 1888 by John Stewart, a Nowra auctioneer.[4] With Moss's connections to the Aboriginal community, it is unlikely he would have purchased items from the local auctioneer. Irrespective of this, the buyer was certainly not Moss, as Moss had passed away the previous year.

The evidence presented has shown Henry and Sarah Moss's exceptional relationship with the local Aboriginal community, which was one of reciprocity, friendship and trust. [Figure 13] I can only speculate as to how Henry Moss procured his many large alum crystals. Did Moss's wife Sarah, who had spent considerable time with Aboriginal people and with whom the local Aboriginal people shared their cultural knowledge, obtain these specimens? Did Sarah use healing crystals in her bush medicine practice? Or did Moss obtain the specimens of alum from Mickey Johnston? With connections to the Worimi Country, the manufacturing hub and

[3] Bennett, For a Labourer Worthy of His Hire, 235.
[4] Bennett, For a Labourer Worthy of His Hire, 216.

source of alum crystals, Johnston was also known to sell cultural artefacts. Or was Billy Bulloo, known for trading geological items to colonists, the source from which Moss obtained his samples? Bulloo, aware of Moss interest in mineral specimens, may have provided alum crystals to Moss. Given Bulloo's reputation, observers may have made the assumption large specimens of crystallised alum were large lumps of gold-bearing quartz. [See Figure 14] Or did Moss obtain the Aboriginal manufactured alum crystals through other good relationships he enjoyed with the wider Aboriginal community of the Shoalhaven district? It is possible that the large pieces of crystallised alum provided by Henry Moss to the Ethnological Court were obtained by his wife Sarah through her work as a medicine woman.

Billy Bulloo and Mickey Johnston existed in what (Worimi) historian Professor John Maynard describes as the 'third space at the intersection between black and white'.[5] Equally, these men lived during a time of great upheaval and change for Aboriginal people. As these men witnessed the destruction of their traditional way of life, they managed to adapt to the reality of the dispossession, surviving the effects of colonisation by forging relationships on their own terms with the colonists. Both Bulloo and Johnston worked, in different capacities, as Aboriginal miners to attain financial independence. Moss, having suffered discrimination himself, was sympathetic to Aboriginal people existing in this third space. As a man of influence, Moss was able to use his position and power to help the south coast Aboriginal community, of which both Bulloo and Johnston were leaders. Moss and his wife earned the trust of the local Aboriginal people through their many charitable actions. The Mosses' close relationship with the south coast Aboriginal community allowed them to gather an

[5] D. Cronshaw, "'First Aussie' on display at Lake", *Newcastle Herald,* February 7, 2013, newcastleherald.com.au/story/1286599/first-aussie-on-display-at-lake/undefined/

impressive, and unique, ethnological collection, the record of which is immensely valuable to Aboriginal people today.

The Exhibitions

Henry Moss was a keen contributor to various exhibitions, which were held both in Sydney and overseas. The Exhibitions and World Fairs of the late nineteenth and early twentieth centuries were organised to display the industrial developments and technological achievements of various nations. The first international exhibition was The Great Exhibition of 1851, which was held in Hyde Park, London.

At the New South Wales Exhibition in 1861, Moss exhibited specimens of alum.[6] The total collection of these exhibited articles were intended for transport to England to be displayed at the International Exhibition. Totalling approximately two hundred tons when packed for shipping, these articles were sent with the purpose of advertising the colony.[7] The exhibits attracted large crowds of visitors when they were put on public display from 16 October 1861 to 7 November 1861. During this time 14,894 visitors came to the exhibition held at the Hall of the School of Arts in Sydney.

Henry Moss was no small contributor to the 1867 Paris Exhibition. Moss forwarded twelve cases of exhibits, including seed starch from the burrawang nut and specimens of the burrawang plant. Moss's exhibits were primarily sourced directly from the Aboriginal people of the south coast or curated using Aboriginal traditional knowledge. Moss's specimens also

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[6] *Catalogue of the Natural and Industrial Products of New South Wales, Exhibited in the School of Arts by the International Exhibition Commissioners, Sydney*, Sydney: Reading and Wellbank, October 1861, held online by the State Library of Victoria, https://viewer.slv.vic.gov.au/?entity=IE4348288&mode=browse .
[7] "The New South Wales Exhibition", *The Sydney Morning Herald*, November 8, 1861, 4.

included medicinal and fragrant barks, a specimen of pearly white fine porcelain pipeclay,[8] a large quantity of alum and Aboriginal implements, which included grasstree blades used to obtain fire through friction.[9] The bark, clay and alum each had traditional Aboriginal medical applications. These exhibits speak volumes about traditional Aboriginal culture, demonstrating that although dispossession had severely impacted traditional ways of life, many cultural manufacturing practices were still being maintained throughout the late 1800s. However, we can also glean those important cultural practices, such as the traditional manufacturing of fish-hooks, were halted due to colonisation.

The early exhibitions Henry Moss contributed to did not provide clear ethnological categories, although he did submit ethnological items for display. In stark contrast to the early International Exhibitions were the World Fairs in which Moss did not participate. The ethnological displays of the World Fairs contained what was termed as 'ethnological expositions' – or human zoos. In racist, degrading, and blatant displays of colonialism, the Parisian World Fairs of 1878 and 1889 exhibited a *Village Negre*, or Negro Village. A major attraction of the 1889 World Fair was the exhibition of 400 Indigenous people. The early International Exhibitions of the nineteenth century were devoid of any distinct ethnological categories until the 1879-80 International Exhibition.[10] The Ethnological Court of the 1879-80 Sydney International Exhibition was the first of its kind[11] and Moss's first public display of his larger ethnological collection. The Ethnological Court was the most comprehensive and wide-ranging collection of the ethnology of Australia and the Pacific Islands that had

[8] This clay is generally predominantly kaolin.
[9] "Paris Exhibition", *Illawarra Mercury,* November 23, 1866, 2.
[10] The Colonial Exhibitions of the twentieth century, such as those held in Marseilles (1906 and 1922) and in Paris (1907 and 1931), exhibited nude and semi-nude humans in cages: see 29.1.3: The World Fairs, Ch. 26, History of Western Civilisation II: courses.lumenlearning.com/suny-hccc-worldhistory2/chapter/the-world-fairs/#:~:text=Key%20Terms-,The%Great%20Exhibtion,was%20a%20much%20anticipated%20event. 6 August 2020.
[11] I. V. Accarigi. *The Ethnological Court at the Sydney Garden Exhibition, 1879*, Sydney: Kaldor Public Art Projects, 2016, 137.

ever been placed on display anywhere in the world. Moss would have keenly anticipated the Ethnological Court, hoping it would at last provide a stage upon which Aboriginal technology, industry and culture could be showcased to the world. Moss contributed a large and varied collection that he placed at the disposal of the ethnological sub-committee.[12]

Seed Starch from the Burrawang

Henry Moss, passionate about burrawang seed starch and its potential benefit to the colony,[13] sent many samples to various exhibitions intent on the promotion of this resource. Described as 'excellent quality arrowroot'[14] when displayed at various exhibitions, Moss considered the burrawang seed starch to be 'of the utmost importance'[15] to the colonisers. The burrawang provided an abundant, nutritious and readily available natural food supply[16].

In the mid-1800s, the Aboriginal use of burrawang seed starch to make bread-cakes was not widely known among the colonisers. The Aboriginal procedure employed to process the burrawang nuts to obtain edible seed starch explained by Moss, sat in stark contrast to the predominant view held by early colonists of Aboriginal people as wandering hunters.

Henry Moss was the first non-Indigenous man to learn the Aboriginal process used to obtain the starch from the burrawang nut[17], albeit through the intermediary of his wife, Sarah. A permeating belief about Aboriginal people held at this time can be summarised by this

[12] "Ethnological Court", *Australian Town and Country Journal,* November 8, 1879, 9.
[13] "Local Intelligence", *The Armidale and New England General Advertiser*, December 6, 1871, 6.
[14] "Arrowroot from the Burrawang Nut", *Australian Town and Country Journal*, September 24, 1870, 13.
[15] "Local Intelligence", December 6, 1871, 6.
[16] "Arrowroot from the Burrawang Nut", 13.
[17] "Burrawang Nuts", *The Shoalhaven News and South Coast Districts Advertiser*, July 9, 1910, 4.

paragraph from the *Sydney Mail*'s 'A Voice From The Country' column, published in September 1863

> The habits of these races were wandering; they lived by the chase, having no idea of cultivating the soil; and it is a noteworthy fact that the Allwise has implanted no indigenous cereal, excepting grasses, in this wide region, which commands so vast a difference of climate and soil. Nor have we roots to take the place of the taro, sweet potato, and yam of the South Sea Islands. Thus, while the American Indian tills his maize, the African his rice, and the inhabitants of the Pacific these esculent tubers, the Australian tribes seemed destined for a race of hunters – hence wanderers. To the European was reserved the developing these sources of wealth and plenty.[18]

Many colonists were ignorant of the fact Aboriginal people farmed and utilised a wide variety of roots, tubers, seeds, nuts and bulbs for food, including taro in parts of Queensland and the Northern Territory. For thousands of years, Aboriginal people had been growing a variety of crops such as yams and grains, including native millet. Was it not for Pascoe's work, *Dark Emu: Aboriginal Australia and the birth of agriculture*,[19] many would still be ignorant of this fact. This misinformation was not, however, unintentional. The British Empire's depiction of Aboriginal people as hunter-gatherers, with no connection to the land, helped them to construct the fiction of *terra nullius*. In fact, there is no other race on earth with a longer cultural connection to their land than Aboriginal people.[20]

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[18] "A Voice From The Country, Recollections of the Aborigines", *Sydney Mail*, September 12, 1863, 8.
[19] Bruce Pascoe, *Dark Emu: Aboriginal Australia and the birth of agriculture.* Broome: Magabala Books Aboriginal Corporation, 2018.
[20] A. Cribb and Cribb, J. *Wild Medicine in Australia*. Sydney: Fontana/Collins, 1984, 11; B. Gammage, *The Biggest Estate on Earth: How Aborigines Made Australia,* Crows Nest: Allen and Unwin, 2012.

Henry Moss's enthusiasm in exhibiting the seed starch from the burrawang secured the attention of a writer from the *Australian Town and Country Journal* who, in September 1870, reported the burrawang, scattered all over the coast and for several miles inland, represented an excellent quality food source that was, for the colonists, far easier to obtain than commercial arrowroot[21]. Burrawang plants covered thousands of acres of the New South Wales south coast at this time. The reporter noted that not one plant need be destroyed during harvesting the nuts required to obtain the seed starch, which was a valued, staple food of the Aboriginal people.[22]

On 23 August, 1879 it was reported in *The Sydney Mail* and *New South Wales Advertiser* that Henry Moss was preparing to exhibit his recent discoveries of copper and his specimens of variegated marble at the Sydney International Exhibition. On the same date it was reported in the *Evening News* that the Sydney International Exhibition's committee had received word that Dr James Hector, New Zealand's exhibition 'Commissioner' and an Executive Commissioner of the Sydney International Exhibition of 1879[23]

> had arrived from New Zealand with a large and valuable collection of ethnological specimens. Upon Dr Hector learning that the scheme for their [ethnological] exhibition had been abandoned, he expressed a desire that the commission would reconsider the subject, and volunteered to render every assistance in his power.[24]

This rendered the Ethnological Court a late addition to the program for the Sydney International Exhibition, making it the first display of its kind. The committee agreed private persons should be invited to become contributors to the Sydney International Exhibition's ethnological display and agreed to make an application to the Sydney Museum's trustees

[21] "Arrowroot from the Burrawang Nut", *Australian Town and Country Journal,* September 24, 1870, 13.
[22] "Burrawang Nuts", 4; "A Tour to the South", *Empire,* October 11, 1871, 3.
[23] "Sydney International Exhibition of 1879", *The Sydney Morning Herald*, September 18, 1879, 6.
[24] "International Exhibition Commission, Education and Science", *Evening News,* August 23, 1879, 5.

requesting a collection of specimens for exhibition. Until the announcement of the Ethnological Court's inclusion in the Sydney International Exhibition's program, Henry Moss had been preparing his collection of recently mined copper ore and his specimens of variegated marble for display. Despite such short notice, Moss set to work preparing his large ethnological collection for display.[25] As mentioned in Chapter 5 of this work, Sir James Hector displayed a large alum crystal weighing several pounds to interested parties in New Zealand in 1888. It was here, at the Ethnological Court in 1879, that Hector was made aware of the Aboriginal use of alum and that it must be available in large quantity somewhere on the continent.

In October 1879, Henry Moss's collection was described as 'most interesting and valuable' by a writer from the *Telegraph and Shoalhaven Advertiser.* Moss's exhibits were considered by the writer to be representative of 'the primitive life of the [A]borigines of this district, and the indigenous products of its soil'. The writer expressed that Moss's samples of burrawang seed starch and his specimens of fragrant and medicinal barks would be of special interest. The writer noted that Moss's collection was 'comprised of much that has hitherto passed unnoticed, and which will probably prove that not a few of our indigenous plants embrace properties of high commercial value'.[26] From a commercial standpoint, Moss's excellent quality samples of grass-tree gum varnish, seed starch from the burrawang and medicinal Sassafras bark represented great importance. The Sassafras bark's medicinal qualities realised immense worth, being highly prized in Europe.[27]

[25] "Sydney International Exhibition of 1879", 6; "Nowra", *The Sydney Mail and New South Wales Advertiser,* August 23, 1879, 12, 302; "International Exhibition Commission, Education and Science", 5.
[26] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*, October 30, 1879, 2.
[27] "Shoalhaven at the Garden Palace", 2.

Medicinal Bark from the Sassafras

Within his ethnological collection, Moss put forward samples of Sassafras medicinal bark. Medicinal barks had differing uses determined by their species. Some were used as tonics to treat fevers, others as treatments for dysentery, while the stringy-bark was utilised as bandages. The bark of the *Alstonia constricta,* also known as Bitter Bark or the bark of the Quinine Tree, was used during World War II as part of the Australian War Pharmacopoeia, as noted to replace 'the imported bitters quassia, gentian and calumba'.[28] The Sassafras bark displayed for its medicinal qualities may have been from the Southern Sassafras, the Yellow Sassafras or Oliver's Sassafras, which all appear in NSW, although Australia's Grey Sassafras is mainly located in northern Queensland's rainforests. These different species were used for differing remedies; one as a diarrhoea treatment,[29] one as a tonic drink[30] and one as a treatment for venereal disease.[31] Moss's Sassafras medicinal bark[32] was highly valued in Europe at the time.[33]

Copper Ore from Tim's Gully

Henry Moss sent samples of several heavy pieces of copper ore, discovered when Moss had taken a party to Tim's Gully, to be exhibited in the 1879-80 Sydney International Exhibition's New South Wales Court. Moss sought to advertise the Shoalhaven's rich copper load on the world stage. Moss went to considerable expense and trouble to curate his exhibits.

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[28] Cribb and Cribb, *Wild Medicine*, 11.
[29] *Cinnamomum oliveri*, or Oliver's Sassafras.
[30] *Doryphora sassafras*, or Yellow Sassafras.
[31] *Atherosperma moschatum*, or Southern Sassafras.
[32] A Sassafras range was situated some 50 kilometres from Nowra, which is likely what is known today as the locality of Sassafras, home to about 30 residents to Nowra's Southwest, according to the Australian Bureau of Statistics, see https://www.abs.gov.au/census/find-census-data/quickstats/2016/SSC13493.
[33] Cribb and Cribb, *Wild Medicine*, 11; "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*, October 30, 1879, 2.

Shortly before this exhibition a ton of rich copper ore procured from the Tim's Gully site had been transported around 45 miles to Nowra and then sent on to the exhibition in Sydney.[34] Moss's name appears in the Index of the 'Official Catalogue of the New South Wales Court' as a contributor, although no page number is listed detailing where his contribution is exhibited. [35] Moss's contribution was displayed as part of the Department of Mines mineral showcase; Exhibit No.50 is listed plainly in the Official Catalogue of the New South Wales Court as 'Specimens of Copper Ores from various localities in New South Wales'.[36]

The New South Wales Court occupied a large space in the Garden Palace's southeast angle, fronting the transept and the nave. [See Figure 15] The New South Wales Court was so huge a display it stretched into the basement below and the galleries above.

> The flagship exhibitor was the Department of Mines, which organised an enormous and comprehensive display of New South Wales' mineral resources; the most spectacular of them were mounted in a mini-court in the nave.[37]

For decades, Henry Moss was in constant communication with the Rev. W. B. Clarke and sent Clarke copious geological samples and specimens. In fact, Moss sent Clarke so many samples that, at a public meeting in Shoalhaven, Dr George Underwood Alley commented these specimens 'would, if all collected, pave the road from Mr Ryan's Hotel [Berrima] to Nowra,'[38] which is a distance of about 70 kilometres![39] This speaks to the thoroughness of Moss's geological investigations of the district. Clarke, remembered today as 'one of the

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[34] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*, October 30, 1879, 2.
[35] *Official Catalogue of the New South Wales Court, Sydney International Exhibition 1879: New South Wales Court,* Sydney: Thomas Richards, Government Printer, 1880, Index, page ix.
[36] *Official Catalogue of the New South Wales Court*, Index, page ix, 5.
[37] L. Young. Let them see how like England we can be: An account of the Sydney International Exhibition 1879 Unpublished Master of Arts thesis – Historical archaeology, University of Sydney, 1983, 200.
[38] "Shoalhaven. From our correspondent: Public Meeting", *Illawarra Mercury*, October 18, 1861, 2.
[39] "Shoalhaven. From our correspondent: Public Meeting", 2; "Berrima", *Goulburn Herald*, December 28, 1861, 2.

greatest geologists of the nineteenth century',[40] had passed away over a year before the Sydney International Exhibition opened its doors. However, Clarke's collection found a place within the Exhibition's mining and metallurgy exhibits,

> The most spectacular and popular exhibits in the mining products department were the impressive mineral collections shown by nearly every country and colony. The highest prize went to the Rev. W. B. Clarke's famous collection recently acquired by the NSW Department of Mines, which comprised more than a thousand samples; the judges commented that it was 'difficult to class it sufficiently high on account of its great superiority'[41]

Samples collected by Henry Moss were displayed in the collections of the Department of Mines; both within the collection of the late Rev. W. B. Clarke and within the Department of Mines' own mineral displays. Moss, not one to seek out personal adulation or reward, was always keen to contribute to the knowledge of the Shoalhaven's mineralogy and geology. Moss was 'in constant communication with the Department of Mines'[42] until his last days he continued to put forth geological samples from the south coast.[43]

The 1879-80 Sydney International Exhibition at the Garden Palace

The 1879-80 Sydney International Exhibition, held at the Garden Palace, was

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[40] Rev. W. B. Clarke. *Australian Town and Country Journal*, June 22, 1878, 17.
[41] Young, "Let them see how like England we can be", 78; "Official Record of the Sydney International Exhibition", *The Sydney Daily Telegraph,* November 30, 1881, 3.
[42] "Obituary", *The Shoalhaven Telegraph,* September 21, 1887, 2.
[43] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser,* October 30, 1879, 2.; Young, "Let them see how like England we can be", 388; "The Late Mr. Henry Moss", *The Kiama Independent and Shoalhaven Advertiser*, September 23, 1887, 2.

> the ninth International Exhibition and the colony's first and was responsible for bringing the world to Sydney at a time when the colony was prosperous and full of potential. The Exhibition – opening on 17 September 1879 and closing on 20 April 1880 – had an enormous impact on the community. The Exhibition boosted the economy and was the catalyst for improving the city's infrastructure[44]. [See Figure 16]

First proposed by the Agricultural Society in 1877, the Sydney International Exhibition of 1879-80 received a royal commission in 1878 from Queen Victoria. The exhibition allowed for the Australian colonies, in particular New South Wales, to advertise their trades, promote their 'progress' and denote themselves as an appealing destination for migrants.[45]

The opening ceremony bore witness to a choir of 700 men, women and children singing the official exhibition cantata, accompanied by the exhibition organ, eight pianos and a fifty-piece orchestra. For the exhibition, Henry Kendall wrote a libretto, 'The Cantata', for which Paolo Giorza composed the music. The lyrics included the lines:

> North and South and West and East
> Gather in to grace our Feast.
> Shining nations! let them see
> How like England we can be.[46]

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[44] S. Morley, "The Garden Palace: Building an Early Sydney Icon", *M/C Journal* [S.I.], 20: 2 (April. 2017). journal.media-culture.org.au/index.php/mcjournal/article/view/1223.
[45] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 136-141.
[46] "International Exhibition." *Official Record of the Sydney International Exhibition, 1879*. Sydney: Govt. Printer, 1881, lvii; Young, "Let them see how like England we can be", 388. The Cantata's lyrics were widely published in the press and were included in the Official Record). Giorza published the piano score (printed by Troedel and Co.) after the Opening. The Cantana was performed in recent history to commemorate the centenary of the destruction of the Garden Palace on 22 September 1982. See "Official Record of the Sydney International Exhibition", *The Sydney Daily Telegraph*, November 30, 1881, lvii.

From the above line's clear declaration, the Cantata's lyrics went on to include further unsubtle intimations as to the narrative the Sydney International Exhibition was to propagate, particularly in relation to Aboriginal people. It would certainly not be the display of Aboriginal technology and knowledge Henry Moss may have envisioned as he curated his collection. Part II of the cantata declared:

> Where now a radiant city stands,
>
> The dark oak used to wave,
>
> The Elfin harp of lonely lands
>
> Above the wild man's grave,
>
> Through windless woods, one clear sweet stream
>
> Stole like the river of a dream,
>
> A hundred years ago.
>
> Upon the hills that blaze to-day
>
> With splendid dome and spire,
>
> The naked hunter tracked his prey,
>
> And slumbered by his fire…[47]

The celebratory chorus continued to Part III, which triumphantly declared:

> The life and heat of light have chased away
>
> Australia's dark mysterious yesterday.[48]

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[47] "International Exhibition." *Official Record of the Sydney International Exhibition, 1879.* Sydney: Govt. Printer, 1881, lvii; L. Young, "Let them see how like England we can be: An account of the Sydney International Exhibition 1879", Master of Arts thesis – Historical archaeology, University of Sydney, Sydney: 1983, 388.The Cantata's lyrics were widely published in the press and were included in the Official Record ("International Exhibition." *Official Record of the Sydney International Exhibition, 1879*, lvii). Giorza published the piano score (printed by Troedel and Co.) after the Opening. The Cantana was performed in recent history to commemorate the centenary of the destruction of the Garden Palace on 22 September 1982.

[48] "International Exhibition." *Official Record of the Sydney International Exhibition, 1879*. Sydney: Govt. Printer, 1881, lvii; L. Young, "Let them see how like England we can be: An account of the Sydney

The Sydney International Exhibition's Ethnological Court opened on 10 November, 1879, the Prince of Wales' birthday holiday. [See Figure 17] The opening came almost two months after the exhibition's official opening on 17 September 1879, the Ethnological Court being a late addition to the program.[49]

The Sydney International Exhibition of 1879 featured around 14,000 exhibits, which were packed into the pavilions, displaying metals, minerals, wood carvings, watches, heavy machinery, tapestries, glass, fabrics, pyramids of gold, fine porcelain and, displayed within the Ethnological Court, ethnographic specimens. The exhibition was held at the Garden Palace, which was impressive in scale, measuring about three times the size of Sydney's Queen Victoria Building.[50] [See Figure 18]

Sydney's Garden Palace was:

> a magnificent building with a grandeur that dominated the skyline, stretching from the site of the current State Library of New South Wales to the building that now houses the Sydney Conservatorium of Music … The building was an architectural and engineering wonder set in a cathedral-like cruciform design, showcasing a stained-glass skylight in the largest dome in the southern hemisphere (64 metres high and 30 metres in diameter). The total floor space of the exhibition building was three and a half hectares, and the area occupied by the Garden Palace and related buildings –

International Exhibition 1879", Master of Arts thesis – Historical archaeology, University of Sydney, Sydney: 1983, 388.The Cantata's lyrics were widely published in the press and were included in the Official Record ("International Exhibition." *Official Record of the Sydney International Exhibition, 1879*, lvii). Giorza published the piano score (printed by Troedel and Co.) after the Opening. The Cantana was performed in recent history to commemorate the centenary of the destruction of the Garden Palace on 22 September 1982.

[49] Young, Let them see how like England we can be.

[50] Morley, "The Garden Palace: Building an Early Sydney Icon"; J. Richards, "Indigenous art highlights Sydney's Garden Palace fire of 1882", *Australian Geographic*, (2016, 30 September), australiangeographic.com.au/news/2016/09/jonathan-jones-barrangal-dyara/ last accessed 20 May 2020.

including the Fine Arts Gallery, Agricultural Hall, Machinery Hall and 10 restaurants and places of refreshment – was an astounding 14 hectares.[51]

The Ethnological Court at The Garden Palace

The formation of an ethnological collection within the Garden Palace was proposed to include objects depicting the natural history of each Indigenous group, including items used in ceremonies, for personal ornament and specimens of Indigenous foods, both animal and vegetable. In addition, weapons used for warfare and for hunting food were given deliberate emphasis. The Ethnological Court was the first exhibition of its kind, showcasing material cultural objects sourced from a diverse range of Indigenous peoples of the Pacific region.

In a similar vein to other world's fairs or international exhibitions, the public came to the Garden Palace to learn, be entertained and captivated by displays of technical, industrial and technological progress; successful trade; agriculture; architecture; art; music; manufacturing and exotic tribal artefacts. The arrangement of these objects, however, confirms a deliberate narrative was in play. 'International exhibitions were conceived with precise conceptual and ideological narrative frames in mind, and the displays of objects made these narratives visible'[52]

The 1879-80 Sydney International Exhibition presented at the resplendent Garden Palace certainly created spaces that asserted certain narratives of nationalism, innovation and

[51] Morley, "The Garden Palace: Building an Early Sydney Icon"; "International Exhibition." *Official Record of the Sydney International Exhibition, 1879*, xxxvi.
[52] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition,* 133.

advancement, evident in the way the ethnological objects were presented and exhibited within these national pavilions, called 'courts'. [See Figure 19]

> The spatial and oral rhetoric, the ceremonies, the cantana composed for the occasion, the rituals of the opening, animated the exhibitions and reaffirmed, in the Garden Palace's case, New South Wales leadership in matters of progress in Australia and the Pacific. The idea of progress itself, though, was made possible by the counterpoint provided by the Ethnological Court.[53]

The Ethnological Court Sub-Committee

Henry Moss was a principal contributor to the exhibition's Ethnological Court. Despite this, Moss had no control over how his collection of Aboriginal cultural objects and specimens were displayed.[54] As a private exhibitor, Moss was required to place his artefacts and specimens 'at the disposal of the committee'.[55]

The Ethnological Court's objects and specimens were housed in the northern gallery of the Garden Palace's east transept informs the ethnological exhibition was assembled

> by a committee of typically learned and dedicated gentlemen scientists: W. J. Stephens, appointed Professor of Natural History at Sydney University in 1882 and a Trustee of the Australian Museum; Dr. Alfred Roberts, surgeon at Sydney Hospital and also a Trustee; Dr. James Hector, Director of the New Zealand Museum and Executive Commissioner for New Zealand; Professor Frederick Reuleaux, the

[53] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition,* 138.
[54] "Official Catalogue of the General Ethnological Collection." *Sydney International Exhibition, 1879: Ethnological Gallery*. Sydney: Thomas Richards, Govt. Printer, 1880, vii. https://media.australianmuseum.net.au/media/dd/Uploads/Documents/35779/SydIntExh1879_EthnoCat_lowres.700bf86.pdf
[55] "Ethnological Court", *Australian Town and Country Journal* November 8, 1879, 9.

> Imperial German Commissioner; and the indefatigable Professor Archibald Liversidge.[56]

Professor Liversidge, a graduate of Christ's College, Cambridge, had become Sydney University's professor of geology and mineralogy in 1874. When the Ethnological Court opened in November 1879, Liversidge had recently enjoyed success in lobbying the Sydney University senate to open a Faculty of Science. Liversidge was made the first, or foundation, Dean of Science for the university.[57]

In November 1879, a writer for *The Sydney Mail* reported Dr James Hector of the Ethnological sub-committee and the Committee Chairman, Mr Alfred Roberts, had decided the final arrangement of the objects displayed in the Ethnological Court, with a focus on grouping the specimens as close to the geographical localities of their origin as possible.[58] On the date of the opening, *The Sydney Morning Herald* published an article stating, 'the principle on which the Court has been arranged has been to render as marked as possible the characteristics of the impliments *(sic)*, weapons and adornments of the various tribes represented'.[59]

The Ethnological Court

The Ethnological Court became,

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[56] Young, "Let them see how like England we can be", 105.
[57] D. P. Mellor, "Liversidge, Archibald (1846-1927)", *Australian Dictionary of Biography,* Vol. 5., (Melbourne: Melbourne University Press, 1974), http://adb.anu.edu.au/biography/liversidge-archibald-4027; R. M. MacLeod, *Archibald Liversidge, FRS: Imperial Science Under the Southern Cross*, Sydney: Sydney University Press, 2009.
[58] "The Ethnological Court", *The Sydney Mail and New South Wales Advertiser,* November 15, 1879, 846.
[59] "The Ethnological Court", *The Sydney Morning Herald*, November 10, 1879, 6.

> a transcultural zone where Indigenous material culture and white Australian imagination met…the objects exhibited at the Garden Palace over 1879-80 can be understood to have entered the order of things of Australian imagination and epistemologies and to have created a rift, destabilising known categories.[60]

The high proportion of weapons on display, over and above other cultural objects factored into conjuring up Australia as *terra nullius*. Exhibits of weaponry framed Aboriginal society as dominated by the male hunter who would engage in, and who was prepared for, warfare.[61] Such framing, particularly concerning rendering Aboriginal people as a race of nomadic hunters, and to a lesser extent, gatherers, plays directly into the British legal dialogue concerning land ownership. Such framing helped create the narrative that land ownership was a foreign concept for Aboriginal people. 'Aboriginal weapons showed nomadic tribes wandering on a land with which they had little connection. In this way, dispossession was legitimised and materialised'.[62]

A report in *The Sydney Mail and New South Wales Advertiser* in October 1879 demonstrates this deliberate dialogue

> The ethnological collection, including poisoned spears, arrows and other weapons from all parts of Australia and Polynesia, promise to be a very attractive feature of the Exhibition. This portion of the gallery remains closed at present, on account of the danger that would be likely to arise from persons incautiously handling these deadly weapons, but the arrangement of these specimens is now very nearly complete, and in

[60] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition,* 133.
[61] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition,* 133.
[62] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 137.

> a very short time this extremely interesting section of the Exhibition will be open to the public.[63]

Curious members of the public had attempted to view the ethnological exhibits in the Garden Palace's north-eastern gallery by peering over the top of a canvas barricade erected to keep the public out of the Ethnological Court until its opening on 10 November 1879.[64] Just two days before the Court's opening, the following paragraph headed an article that appeared in *Australian Town and Country Journal*:

> The Ethnological Court, which has, since the official opening of the Exhibition, been a tabooed spot to the general public, and protected by mysteriously worded notices, threatening instant death from poisoned spears and arrows to all intruders, is at last an accomplished fact, and will, we are informed, be thrown open to the public on Monday next, the day of the grand demonstration in honour of the birthday of the Prince of Wales. We are of the privileged few who have been permitted to pass through the gallery, and as we did not attempt any insane experiments to test the virulence of the poisoned weapons aforesaid, we are here at our desk to compliment the ethnological sub-committee generally – Dr Hector and the chairman (Dr. Roberts) in particular – for the very instructive and picturesque display which the gallery presents.[65]

The *Australian Town and Country Journal* writer continues to praise the arrangement of the items showcased and, in a later paragraph, the display's calculated emphasis on weaponry is apparent:

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[63] "France", *The Sydney Mail and New South Wales Advertiser,* October 18, 1879, 653.
[64] "The Ethnological Court", *The Sydney Morning Herald*, November 10, 1879, 6.
[65] "Ethnological Court", *Australian Town and Country Journal*, November 8, 1879, 9.

> Australia has been ransacked through all its colonies to contribute its indications of the mode of life, the habits and the customs of its [A]boriginal tribes, and with results which prove that our despised "blacks" are people of much more fertile resource that they are generally credited with being. The boomerang, a weapon found among no other race, is formed on principles which would puzzle many wise men to explain; and the womerah, or throwing stick, used for propelling their spears, is a further proof of their inventive genius.[66]

Aside from weaponry, any Indigenous invention, ingenuity and, in particular, invigorative objects, such as Henry Moss's Aboriginal alum crystals, appear to have been ignored by the ethnological sub-committee, likely because they simply did not fit the intended colonial narrative.[67] However, whilst their presence was not emphasised, the crystallised alum samples certainly did not go unnoticed by members of the ethnological sub-committee.

The ethnological sub-committee recognised the importance of Henry Moss's substantial specimens of alum. The committee was, after all, comprised of two excellent geologists who were experts in mineralogy: Dr James Hector and Professor Archibald Liversidge. Both Hector and Dr Alfred Roberts were qualified medical doctors; Hector, a graduate of the University of Edinburgh, and Roberts, a member of the Royal College of Surgeons, London[68]. When the Ethnological Court opened, alum had been recognised as a medicinal item in Britain for centuries, appearing in a Welsh medical manual published in the twelfth

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[66] "Ethnological Court", *Australian Town and Country Journal*, November 8, 1879, 9.
[67] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 133.
[68] R. K. Dell, "Hector, James", *Dictionary of New Zealand Biography,* first published in the Dictionary of New Zealand Biography in 1990, now available online at *Te Ara – the Encyclopedia of New Zealand*, https://teara.govt.nz/en/biographies/1h15/hector-james; M. Rutledge, 'Roberts, sir Alfred (1823-1898),' Australian Dictionary of Biography, Australian National University, published first in hardcopy 1976, accessed online 3 February 2023, http://adb.anu.edu.au/biography/roberts-sir-alfred-4485/text7325

century (1177) *The Physicians of Middfai*[69]. Importantly, Liversidge himself had reported no commercial source of alum had been identified in the colony.[70] The presence of sizeable, crystallised samples of alum in Moss's collection would have immediately captured the attention of both Hector and Liversidge.

In 1866, while lecturing on the geology of the colony, the Rev. W. B. Clarke stated he had been excited by traces of alum discovered below Berrima, which he had hoped were representative of a plentiful supply,[71] and in 1877 he had been hopeful of the discovery of alum of commercial importance in the Capertee Basin, near the Mudgee Road.[72] Clarke had also identified alum at Burning Mountain, on New South Wales' mid-north coast. At Burning Mountain Clarke encountered efflorescent sulphur crystals, and crystals the colour of the very palest straw, which were found in the same areas alum abounded.[73] Liversidge had, many years prior to the exhibition, also encountered alum at Burning Mountain, but misidentified[74] this specimen of alum as kalinite.[75] Where certain members of the committee, such as Frederick Reuleaux, a machinery specialist and W. J. Stephens, a Professor of Natural History, could be forgiven for not grasping the medical significance of Moss's crystallised alum pieces, certainly Roberts and Hector and for that matter, Liversidge, had no such excuse.[76]

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[69] In 1861 John Pughe published '*Meddygon Myddvai',* which assembled together the majority of the material attributed to the Physicians of Myddfai: https://openlibrary.org/books/OL33086900M/The_physicians_of_Myddvai
[70] A. Liversidge, *The Minerals of New South Wales.* New York: Cambridge University Press, 2022 [1887].
[71] "Lecture on Geology. From Newcastle Papers", *Empire*, May 22, 1866, 3.
[72] "Notes of Travel: The Capertee Basin", *The Sydney Mail and New South Wales Advertiser* August 11, 1877, 3.
[73] "Australia's Only Burning Mountain wonder of nature in the Hunter River District: Fire in Mount Wingen that is not volcanic", *Sunday Times*, September 26, 1920, 22.
[74] Kalinite is a rare monoclinic-prismatic secondary mineral, observed as efflorescence in caves or on alum slates, and a type of alum.
[75] Personal correspondence, R. Hansen, National History Museum, September 11, 2019. This specimen, since correctly identified as alum, still exists and was bequeathed to London's Natural History Museum in 1911 as part of Professor Liversidge's bequest (specimen BM.1927, 1676): Liversidge, *The Minerals of New South Wales*, 201, 262.
[76] Dell, "Hector, James.

Henry Moss was a prolific contributor to the early colony's authorities of both geological samples and geological knowledge, having developed a close friendship with Rev. W. B. Clarke and a working relationship with those at the Department of Mines. Moss's contribution of alum crystals alerted colonial authorities to Aboriginal knowledge of the source of alum on the continent, for had Moss's crystallised alum exhibits been naturally formed specimens they would not have been included by Moss, nor the ethnological sub-committee, in Moss's ethnological collection.

Henry Moss's knowledge of the geology and mineralogy of the Shoalhaven district ensured he was aware his alum specimens had been obtained outside of the district. Alum's presence in the Shoalhaven district was minimal. Liversidge had noted alum as efflorescence 'under sheltered ledges of the coal measure sandstone, usually with epsomite, as at…the mouth of the Shoalhaven River'. [77] In 1882, after the Sydney International Exhibition, some massive sandstone boulders yielding alum were reported by a writer for *Australian Town and Country Journal* as being in Bomaderry Creek. In 1841, alum had also been sourced running off a rock after heavy rains in what was then aptly named Alum Creek, near the Blue Mountains[78]. However, nothing has been located that could compare in any way to Bulahdelah Mountain, or that would point to a south coast Aboriginal alum crystal manufacturing site.[79] Had Moss discovered a workable deposit of alum, in all probability he would have set about mining it and immediately advised the relevant authorities. Moss had discovered deposits of tin,

[77] Liversidge, *The Minerals of New South Wales*, 156.
[78] "Mineral productions of the Colony", *Geelong Advertiser,* July 10, 1841, 4.
[79] "Southern Pencillings", *Australian Town and Country Journal*, December 9, 1882, 26.

copper, and gold and owned his own boring equipment; Moss offered advice to other prospectors and was part of the Pinnacle Gold Mining Company at Yalwal.[80]

A writer for *The Telegraph and Shoalhaven Advertiser* described Henry Moss's specimens of alum as 'splendid … large crystallised pieces'.[81] While the exact size and weight of these large specimens was not recorded, we can make a comparison with another large crystallised alum specimen exhibited in the same decade. Dr. James Hector, one of the members of the Ethnological Court's ethnological sub-committee and one of the men in charge of displaying Moss's ethnological exhibits, presented a large piece of crystallised alum to the Wellington Philosophical Society in November 1888. A writer for New Zealand's *Daily Telegraph* stated this crystal, sourced from New South Wales' Bulahdelah Mountain, weighed 'several pounds'.[82] Hector's piece was likely sourced from the Worimi, and may have been one of the last traditionally manufactured Aboriginal alum crystals in existence as discussed in Chapter 6. From the description of Hector's sample we can assume that Moss's large crystallised pieces were of a similar mass.

The committee chose not to list Henry Moss's large pieces of crystallised alum as a separate exhibit. Rather, the sizeable specimens were jumbled together with an odd assortment of items, including firesticks made from Kurrajong, fibres, traditionally manufactured rope, a canoe, various Aboriginal implements, Moss's burrawang starch, samples of the burrawang plant, medicinal Sassafras bark and, curiously, what is only listed as 'other minerals' in the

[80] A. Clark, "Henry Moss: He Had A Vision For Nowra", *Australian Jewish Historical Society Journal* 11: 4 (1992), 643-649.
[81] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser,* October 30, 1879, 2.
[82] "Untitled", *Daily Telegraph,* Issue 5378, November 17, 1888. This is New Zealand's Daily Telegraph, accessed at paperspast.natlib.govt.nz.

Official Catalogue. Moss exhibit of 'other minerals' likely included Moss's sample of white kaolin pipeclay, also used by Aboriginal people medicinally.

The alum crystals were hard to obtain and important specimens that demonstrated Aboriginal people possessed an advanced knowledge of chemistry and alum's medical applications. However, this pharmaceutical product, manufactured by Aboriginal people, did not follow the calculated narrative of the Ethnological Court. The deliberate ordering of the displays, and the prevalence of weapons over and above other objects, produced three outcomes,

> it enabled the telling of the story of white Australian progress; it erased Aboriginal histories, including histories of struggle and resistance to invasion; and it represented Australia as *terra nullius*.[83]

Newspaper reports, magazines, catalogues and official publications contributed to these deliberate narratives, and ensured they reached those who may not have visited the exhibition in person. The objects presented in the Ethnological Court created the:

> perception of a rather homogenous Aboriginal Australia as hyper-masculine, either because the collectors were predominantly men and simply did not see women's material culture or because women refused to part with their objects.[84]

Gendered traditional roles in Aboriginal society meant certain cultural practices, classified in Aboriginal culture as women's business, would have prevented certain traditional knowledge and cultural items being openly shared with men. Despite this, Henry Moss, aided by his wife's ongoing good relationship with the Shoalhaven Aboriginal people, managed to include cultural items manufactured by Aboriginal women in his ethnological collection.

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[83] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 135.
[84] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 136.

Henry Moss supplied the Ethnological Court with fishing-lines fashioned from the kurrajong and wattle fibre, and hooks made in the traditional way composed of abalone, then commonly called mutton-fish or pearl-shell. Moss went to great efforts to secure these fishing hooks from a very elderly woman who was the only Aboriginal in the Shoalhaven area who still held the knowledge of how to make them.[85]

Henry Moss's Ethnological Exhibits

Henry Moss's carefully curated collection travelled from Aboriginal culture, through Moss's hands, to be presented before a vastly different culture; a culture that had a disturbing, predetermined narrative designed to extinguish a factual representation of Aboriginal society. The narrative formed by the ethnological sub-committee sat in stark contrast to what Moss hoped his showcase would convey. Moss was enthusiastic about Indigenous technologies. Moss, however misguided, shared traditional cultural knowledge with the aim of improving conditions for the colonists. Moss's collection was a labour of love, curated over many years, at great personal expense and with much difficulty. Overall, determined to be a 'most interesting and valuable collection of exhibits'[86] by a writer for *The Telegraph and Shoalhaven Advertiser*. Moss's various exhibits included:

- Two canoes constructed from one sheet of bark each: one 14 feet long and another measuring 16 feet long;
- Traditional paddles and balers;
- A variety of different spears, jerks for throwing spears, shields, boomerangs and nulla-nullas;

[85] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser*, October 30, 1879, 2.
[86] "Shoalhaven at the Garden Palace", 2.

- A large quantity of stone tomahawks (heavy and light);
- Kurrajong fibre utilised for either cording or lines;
- Ropes made from Cabbage-tree fibre, and others made from the Stringy-bark; and samples of cabbage tree fibre from which tradtional brooms are manufactured.
- A bundle of 'native hemp', or *duong*, ideal for making sugar bags.
- Skins of kangaroo, bear and possum;
- Burrawang nuts, and a sample of arrowroot extracted from Burrawang nuts;
- A sample of native lavender and another of native pulu;
- A large cake of grass-tree gum which was used to connect handles to tomahawks and spears;
- Medicinal Sassafras bark and a block of Sassafras timber, displaying its bark.
- A splendid sample of native alum, in large crystalized pieces.[87]

In juxtaposition to the Ethnological Court's narrative, Henry Moss's exhibits evidence Aboriginal people were a technologically and scientifically minded people with a strong connection to Country. When viewed together, Moss's exhibits were a snapshot of the traditional life of the Aboriginal people of New South Wales' south coast. The Aboriginal people of the Shoalhaven had an established and complex connection to their coastal environment, which was evidenced by Moss's exhibits of different canoes, traditional paddles and bailers, and traditionally manufactured fishing lines and fish-hooks. The south coast people, believed to be the first on the continent to have developed this fish-hook technology,

[87] "Shoalhaven at the Garden Palace", 2.

manufactured their hooks by grinding the edge of shells into shape[88]. To make strong fishing lines of plant fibre such as the ones Moss exhibited:

> the fibre had to be freed from the plant tissue by being heated, soaked and beaten or sometimes chewed. The two-ply string was made by rolling the fibre along the thigh.[89]

Shoalhaven's Aboriginal people held unique cultural knowledge of the local area and its waterways. This knowledge included the ability to tell which fish were running, where best to fish for them and when, was gained through hundreds of generations, each having an intimate relationship with Country. South coast people would traditionally move between the coast and the mountains to attend large gatherings that often involved trade, cultural ceremonies or meetings to arrange marriages.[90] Moving between campsites within one's homeland was common among local groups, and rather than speaking to an aimless, peripatetic lifestyle, this was a necessary practice to sustainably manage the available resources.

The collection Henry Moss sent to be exhibited by the Ethnological Court of the Sydney International Exhibition of 1879-80 consisted of a total of 32 exhibits, numbering from 1600 to 1632.[91] In total, around 5,200 specimens were placed on show, arranged in local groupings with careful deliberation.

> The Sub-Committee had hoped to publish a comprehensive descriptive catalogue of the collection but this never eventuated. The only record of the court is a basic listing of exhibitors, national provenance (eg, "Queensland" or sometimes "Diamantina

[88] B. Cruse, L. Stewart, L. and S. Norman. *Mutton Fish: The surviving culture of Aboriginal people and abalone on the south coast of New South Wales*, Canberra: Aboriginal Studies Press, 2014, 23; "Pleasure Resorts", *The Australian Star,* September 22, 1894, 8.
[89] Cruse et al., *Mutton Fish*, 23; "Pleasure Resorts", *The Australian Star,* September 22, 1894, 8.
[90] Cruse et al., *Mutton Fish*, 23; "Pleasure Resorts", 8.
[91] "Local Intelligence", *The Telegraph and Shoalhaven Advertiser*, November 20, 1879, 2.

district"; "New Guinea"; "Soloman Islands" etc.) and very short description (eg, "small double-headed figure", "ceremonial staff", "dance masks" etc.).[92]

Henry Moss's exhibits were listed by the ethnological sub-committee in the Official Catalogue of the General Ethnological Collection, [see Appendix A].

The listing that followed Henry Moss's in the Official Catalogue of the General Ethnological Collection is from 'W. A. Bundock' from 'Wyangane[93], Casino, New South Wales'. Bundock's exhibit of a boombi dilly bag features first, with his last exhibit being a bottle of pituri, described simply as a 'drug used by blacks of Central Australia'.[94] The Wangka-Yutyurru, Wangkamadla, Wangkangurru and Yarluyandi people collected pituri, a narcotic, and then prepared it using a curing process in order to prevent degrading the nicotine levels. The pituri was then placed in semi-circular net bags and then traded as a commodity, being distributed throughout the Lake Eyre basin.[95]

The ethnological sub-committee, made up of men of science, natural historians and ethnographers, would have certainly understood the significance of such an exhibit. Both Henry Moss's and W. A. Bundock's exhibits demonstrated the advanced pharmacopoeia of Aboriginal people. The sub-committee would have been aware of alum's broad medicinal use and "by 1879 the natural history of pituri was known".[96] In part, this was due to the work of Joseph Bancroft. On 4 September, 1879, after 8 years of research, Joseph Bancroft, a medical

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[92] Young, "Let them see how like England we can be", 106.
[93] Mary Bundock, of Wyangarie Station of the Richmond River District wrote to Prof Liversidge on October 8, 1879 describing a 'boombi' dilly bag made by the 'Tarampa tribe' made from stiff grass which was abundant on the ridges of the district: see "Bag," Museum Number Oc1928,0110.107, *The British Museum* website, britishmuseum.org/collection/object/E_Oc1928-0110-107.
[94] "Official Catalogue of the General Ethnological Collection", *Sydney International Exhibition, 1879:* 23
[95] Luke Keogh, "Duboisia Pituri: A Natural History", *Historical Records of Australian Science*, 22: 2 (November 2, 2011): 199-124.
[96] Keogh,"Duboisia Pituri", 199-124.

doctor and chemist, presented his paper '*Pituri and Tobacco'* to the Queensland Philosophical Society in Brisbane. Bancroft addressed the group, stating:

> This discovery [pituri] of the Australian [A]boriginals should tell somewhat in their favour as clever men, against the oft-repeated assertion of ethnologists as to their low position among the human races.[97]

The fallacy that Aboriginal people were beneath the colonisers in intelligence and worth was a theme bolstered by the way in which the ethnological sub-committee presented its exhibition, and one that Bancroft aimed to correct among natural historians and ethnologists. Following Bancroft's presentation, the Queensland Philosophical Society distributed copies of his important paper.[98]

Whilst the natural history of pituri's harvesting, production and distribution may have been understood by the ethnological sub-committee, the general public would likely not have understood the significance of Bundock's exhibit any more than they were likely to have understood the intricate process utilised to obtain seed starch from the burrawang, or the complex processes undertaken to manufacture large, crystallised pieces of alum. Further, the public would not have grasped the complex and sophisticated processes undertaken by Aboriginal people for them to have obtained the knowledge represented by these exhibits.

The Sydney International Exhibition closed its doors on 20 April, 1880. W. A. Bundock's exhibit of pituri in the Ethnological Court may have captured Professor Liversidge's attention during the exhibition as in November 1880, Liversidge, a member of the ethnological sub-committee, read his paper titled 'The Alkaloid from Piturie' before the Royal Society of

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[97] Joseph Bancroft, "Pituri and Tobacco", *Queensland Philosophical Society* (1879), 10.
[98] Keogh, "Duboisia Pituri", 199-124.

NSW.[99] The exhibits of medicinal alum and the drug pituri at the Ethnological Court evidenced an advanced Aboriginal pharmacopoeia. However, these thought-provoking items received little attention during the exhibition. Liversidge's presentation of his paper on pituri before the Royal Society of NSW in late 1880 and, likewise, for Dr James Hector's presentation of his large alum crystal before the Wellington Philosophical Society in late 1888, evidences these men found these items of great scientific interest.

The exhibits of alum, burrawang seed starch and pituri that demonstrated the Aboriginal people's deep knowledge of – and connection to – country remained in the shadows, whilst exhibits of Aboriginal weaponry sat squarely in the spotlight serving to endorse the Ethnological Court's carefully determined portrayal of Aboriginal people. The purposeful narrative reflected in the displays of the Ethnological Court left no room for emphasis on exhibits that reflected Aboriginal connection to land. The piles of weapons on display reinforced the narrative of colonial progress, and the Sydney International Exhibition's 'piles of wheat, cereals, wool, copper and gold showed the ability of the industrious colonists to mix labour with land'.[100] The seventeenth century philosopher John Locke's thoughts on land-owning related firmly to the idea that 'having an idea of property … was confirmed only by the sign of mixing labour with the land through cultivation'.[101] Items that evidenced Aboriginal cultivation or use of domesticated plants did not match the official record of dispossession, despite the fact that Aboriginal people across the country were sowing, harvesting and had developed irrigation systems.

Like other forms of visualisation, the Garden Palace displays were intended to have material effects: they named, classified and ordered objects and people in precise

[99] Archibald Liversidge, "The Alkaloid from Piturie", *Journal of the proceedings of the Royal Society of New South Wales, Royal Society of New South Wales* 14 (1880): 123-132.
[100] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 141.
[101] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 141.

> taxonomies; they separated those who were visualised and interrupted their connections, thus preventing them from becoming political subjects; and they aestheticised what was visualised, thus making objects understandable through the category of 'curiosity', or of beauty and pleasantness, and normalising, in the case of Aboriginal objects, the often-violent frontier histories that had brought the objects to Sydney. This ordering created a specific time-space compression and generated three effects: it enabled the telling of the story of white Australian progress; it erased Aboriginal histories, including histories of struggle and resistance to invasion; and it represented Australia as *terra nullius*.[102]

This false portrayal was controlled and managed by the Ethnological Court's sub-committee and is evident in the way the displays were laid out and ordered to the written and photographic record.[103] The Ethnological Court represented the most comprehensive and wide-ranging collection of the ethnology of the Pacific region ever assembled - yet there was little attempt made to document the varied exhibits. When questioned on the production of an illustrative catalogue of the Ethnological Court's comprehensive exhibits, the Exhibition Commissioners refused to approve the undertaking, instead delaying the matter by leaving it over 'for further consideration'.[104] This reluctance to chronicle the Ethnological Court's exhibits included the photographic record.

> There are many photographic records of the interior of the Garden Palace, but only one of the Ethnological Court, focusing on the Australian Museum's contribution. In this photograph the objects seem to have had a riot. They probably did. Objects escaped the frame and spilled everywhere, hanging from the ceiling, propped against

[102] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 139.
[103] Bruce Pascoe, *Dark Emu: Aboriginal Australia and the birth of agriculture.* Broome: Magabala Books Aboriginal Corporation, 2018; Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*.
[104] "International Exhibition", *The Sydney Daily Telegraph*, October 16, 1879, 3.

> the cabinets and hanging on walls. A tangle of fish-nets dangles from the ceiling, together with a drum and a canoe. Shields, coolamons and clubs decorate the walls. Some Port Essington bark paintings, which were the first barks to be collected by the Australian Museum, recede in the background and are almost invisible.[105]

The sophistication of some of the ethnological exhibits was not invisible to all visitors to the Ethnological Court. In December 1879, a writer for Melbourne's *The Argus* noted that the:

> New South Wales exhibits are very various in their character, and evidence a far greater amount of ingenuity on the part of the [A]boriginal tribes than they generally receive credit for… it would take several columns to furnish anything like a full account of the entire ethnological collection[106].

The writer noted an 'interesting exhibit' of pituri, which the writer explains, 'is used by the blacks as a stimulant and as a preventative against fatigue on their long journeys'.[107] Pituri certainly was an interesting exhibit; however it is doubtful the writer realised the exhibit of pituri represented an Aboriginal industry that involved cultivation, processing, packing and a distribution and trade network which stretched hundreds of kilometres.

The Ethnological Court was a late addition to the 1879-80 Sydney International Exhibition's program. Displaying a collection of modern arts and manufactures side-by-side with what were thought to be primitive technologies was designed to enlarge the state-of-the-art presentations of the Sydney International Exhibition. This comparison was not lost on the writer for *The Argus*, who stated it was:

> peculiarly interesting to be able to contrast within the same building the steady advance in science, arts, and manufactures of enlightened nations with the rude

[105] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 133.
[106] "The Sydney International Exhibition", *The Argus*, December 29, 1879, 7.
[107] "The Sydney International Exhibition", 7.

> though not altogether unskilful work of the 'untutored savage', who is slowly but surely disappearing before the advance of the white man.[108]

Within the 5,200 specimens of cultural material listed in the ethnological catalogue were numerous human remains. Among the human remains displayed by the court's largest contributor, the Australian Museum, there was an exhibit of a dilly bag from the Clarence River, which contained the remains of an Aboriginal female,[109] and human skulls from Papua New Guinea.

Three members of the ethnological sub-committee were among the Ethnological Court's exhibitors, namely Professor Archibald Liversidge, Dr Alfred Roberts and Dr James Hector. Hector's collection from the New Zealand Museum was one of the larger collections exhibited at the Ethnological Court. Among the items displayed was the skeleton of a Moriori female, the skeleton of a Maori male, several human skulls - described as either 'mixed race', 'Polynesian type', 'Melanesian type', 'Moriori type' or 'Maori type' - and various human bones, from both adults and children.[110] The Ethnological Court's exhibition provided more information to visitors regarding the displays of human remains than was provided relating to specimens evidencing Indigenous ingenuity and invention.

The Australian Museum's Curator, Edward Pierson Ramsay, and the Australian Museum's Trustees played an active role in advancing the remains of Aboriginal people as valuable specimens around this time.

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[108] "The Sydney International Exhibition", 7.
[109] Exhibit no.1595, "Catalogue of the General Ethnological Collection". *Sydney International Exhibition, 1879*, 43.
[110] Exhibits 163-173, "Catalogue of the General Ethnological Collection". *Sydney International Exhibition, 1879*, 51; Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 133.

> In 1887 the Museum published a pamphlet by Ramsay, entitled *Hints for the preservation of specimens of natural history*. On the opening page of the work, Ramsay explains that, 'SKELETONS of Aborigines are much wanted, and for the benefit of collectors,' … On the closing page of Ramsay's *Hints*, appears a list of 'Special desiderata of the Australian Museum'. Heading the list are:
>
> > Skins, skulls and skeletons of *Aborigines*, males and females.[111]

In 1878, one year before the opening of the Sydney International Exhibition, the Auckland Museum appears to have been trading Aboriginal crania.[112] James Hector's involvement in the trading of human remains is evidenced in surviving correspondence from Edward Pierson Ramsay. Hector, as Director of the Colonial Museum of New Zealand, received a letter from Ramsay dated 1882, in which Ramsay agrees to provide specimen crustacea, continuing:

> With respect to the skulls I shall be glad to have authentic 'Moriori' and can send a few Australian exchange. The shooting season is over in Queensland and the 'Black Game' is protected now by more humane laws than formerly. So it is impossible to obtain reliable skulls and skeletons.[113]

The Ethnological Court's narrative was formed by the careful arrangement and presentation of ethnological artefacts in which James Hector undoubtedly played a pivotal role. This narrative served to present Indigenous peoples of the South-Pacific as predominantly nomadic hunters, and to a lesser extent gatherers. The notion that, to successfully exist as hunters, required a large proportion of ground, combined with frequent of movement across

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[111] Letters of Edward Pierson Ramsay, c.1870-1900, MS 1589/1-7, Mitchell Library, Sydney, In P. Turnbull. "Ramsay's Regime: the Australian Museum and the Procurement of Aboriginal Bodies, c.1874-1900", *Aboriginal History* 15: II 1991: 113.
[112] T. F. Cheeseman to D. Ramsay, July 9, 1878: MS 1589/3:63, Mitchell Library, as cited in Turnbull, "Ramsay's Regime": 114.
[113] Ramsay to J. Hector, August 28, 1882, cited in Turnbull, "Ramsay's Regime": 115.

this ground, reinforced the misinformed belief that Aboriginal people had little bond to their land. This propagated the idea of land ownership as unfamiliar and furthered the British doctrine of *terra nullius.* The inclusion of several exhibits of human remains, a statement of Social Darwinism, served to further depict the Indigenous people groups represented at the court as a dying race of aggressive savages on the precipice of extinction. The hyper-masculine theme of the court focussed the lens squarely on Indigenous weaponry, simultaneously eliciting fear and nullifying any sympathies that surrounding narratives of dispossession may have aroused.

Seed Starch

Henry Moss's burrawang samples evinced an intricate Aboriginal production process used to procure this excellent quality seed starch. This process required empirical knowledge, forward planning, patience and an ample investment of time and labour. Moss's burrawang seed starch exhibit, and possibly the exhibit of which Moss was the most proud, disputed and contested the fostered perception of the ever-wandering, unintelligent savage. Arrowroot was a staple in the pantry of nineteenth century cooks, considered a finer alternative to flour. Grinding seeds into flour on a grindstone would often take around two hours of hard physical labour. Grindstones were often slabs weighing in at around 30kg and were not easily acquired, nor transported.[114]

Other Specimens

[114] S. Florek, *Australian Museum Blog*, "Food Culture: Aboriginal Bread", August 5, 2014, australianmuseum.net.au/blog-archive/science/food-culture-aboriginal-bread/ last accessed 2 June 2020.

Moss's exhibits of stone tomahawks provided an example of Aboriginal mechanical invention having handles 'aptly and dexterously fitted to the stone'.[115] Moss's sample of sassafras bark speaks of the South Coast Aboriginal population's sophisticated traditional medical knowledge.

Alum Crystals

The significance of Moss's exhibit of alum was likely lost on visitors to the exhibition. The general public may have guessed the large and beautiful sparkling crystals were ornamental, numinous, or possibly even totemic. Others, aware of alum's multi-purpose medicinal use, may not have been aware of how Aboriginal healers utilised this resource. Likewise, many observers would not have understood the sophisticated knowledge of chemistry required to manufacture such large crystals. The colonial world, unaware of the immense source of alum at Bulahdelah, would have been ignorant of the Aboriginal industry Moss's alum specimens represented. The constant reiteration of Aboriginal people as an itinerant people group may have dispelled any thoughts in the colonists' minds that such an industry was possible.

The narrative of colonial superiority

Despite Henry Moss's best intentions his collection of cultural objects were used by the ethnological sub-committee to form a skewed official narrative. This narrative was then promoted in popular press and the official documentation surrounding the Ethnological

[115] "Shoalhaven at the Garden Palace", *The Telegraph,* October 30, 1879.

Court. 'The popular perception of the Ethnological Court was certainly as it was described in a commentary, "a large number of weapons and other curiosities nicely grouped".'[116] What resulted from the Ethnological Court were narratives of colonial superiority, dispossession and extermination. Acknowledging these narratives as wholly false today, we can peruse the catalogue of cultural items taken from their cultural context with a lens focused on acknowledging how these items speak to the sophisticated environmental knowledge held by the Indigenous people they were sourced from.[117]

The Ethnological Court was, in scientific terms, the most comprehensive exhibition of its kind ever assembled in Australia[118]. Henry Moss's own collection of exhibits had either been collected by Moss himself in the Shoalhaven district or had been conveyed to Moss over a distance of up to 30 miles[119]. Henry Moss's exhibit of large pieces of crystallised alum received little attention from the press or the public. In the words of Lord Macaulay, 'the only true history of a country is to be found in its newspapers'[120] and, some 140 years after the 1879-80 Sydney International Exhibition's Ethnological Court at the Garden Palace, I have been able to expand Australia's written histories of the Aboriginal pharmacopoeia using newspaper documentation and the Ethnological Court's catalogue. The large, crystallised pieces of alum exhibited by Henry Moss at the Ethnological Court importantly evidence alum's ongoing manufacture, use and trade in the mid to late 1800's. The Ethnological Court's sub-committee understood the significance of such an exhibition as

[116] "Notes on the Sydney International Exhibition" (1880): 143, quoted in Young, "Let them see how like England we can be", 106.
[117] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 137.
[118] Young, "Let them see how like England we can be".
[119] "Shoalhaven at the Garden Palace", *The Telegraph and Shoalhaven Advertiser,* October 30, 1879, 2.
[120] "Contemporary Chat", *The Cambrian*, 26 August, 1898, 2: Llyfrgell Genedlaethol CymruThe National Library of Wales, papuraunewydd.llyfrgell.cymru/view/3342599/3342602/

> An opportunity so well calculated to stimulate collection, and to exhibit the results under such specifically favourable circumstances will not probably occur again, and the period is rapidly approaching when all opportunity for obtaining the most valuable representative specimens of Ethnology, showing the habits and customs of the uncivilized people of these seas, will have ceased to exist.[121]

The Garden Palace's Ethnological Exhibition is believed to have been the first public showing of Aboriginal bark paintings, some of which are believed to still be in existence today.[122]

Medals and Merit

Henry Moss was awarded a bronze medal from Sydney's International Exhibition of 1879 for his ethnological exhibits, in addition to a bronze medal and a 'Highly Commended' Diploma for his 'arrowroot from burrawang'. This certificate remains on display at the Nowra Museum today.[123]

> The Diploma was officially regarded as the principal award of the Exhibition; an exhibitor received a Diploma for every prize he won but was theoretically allowed only one medal[124].

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[121] "Ethnological Gallery", *Official Catalogue of the General Ethnological Collection*, iii.
[122] R. M. Berndt and E. S. Phillips. (eds). *The Australian Aboriginal Heritage*, Sydney: The Australian Society for Education through the Arts with Ure Smith, 1973, 201; G. O'Donnell, "Bark Paintings that died a dog's death", *Conference of Museum Anthropologists Bulletin*, 5 (1980): 24. O'Donnell suggests ten Aboriginal bark paintings, surreptitious removed from the Australian Museum's collection by Alexander Macleay, are now part of the Macleay Museum's collection.
[123] Clark, "Henry Moss", 643-649; "Burrawang Starch: Australiana", *The World's News*, September 6, 1933, 12; "Burrawang Nuts", *The Shoalhaven News and South Coast Districts Advertiser*, July 9, 1910, 2; "Shoalhaven at the International Exhibition", *The Telegraph and Shoalhaven Advertiser*, May 5, 1881, 2.
[124] Young, "Let them see how like England we can be", 77.

Henry Moss had previously been awarded a silver medal from the London Exhibition of 1862.[125] Moss's son Hyam Moss wrote to *The Sydney Morning Herald* in 1910 stating that his father had received a gold medal from the Paris Exhibition of 1867 in addition to a bronze medal for special casting. Moss was also awarded a silver medal and diploma from the New South Wales Commission for his colonial exhibits to the Paris Exhibition of 1867, which included his burrawang seed starch.[126] Moss's friend, the Rev. W. B. Clarke was a member of the New South Wales Commission who unanimously voted to award Moss the additional silver medal for his skill and perseverance in forwarding his many exhibits.[127]

Henry Moss was not motivated by the desire for recognition or reward, but by the betterment of his community.[128] Not all the exhibitors at the Sydney International Exhibition 1879-80 were satisfied with the way the exhibits were recognised and evaluated:

> Disgruntled exhibitors wrote to the papers nearly every day with variations on the theme: 'I can assure you that an exhibit of mine has been judged by gentlemen who did not know one end of it from the other'.[129]

However, it was not only the exhibitors that were unhappy with the circumstances. *The Sydney Morning Herald* published a letter addressed to the editor on 6 March, 1880, that read, in part, as follows:

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[125] An Aboriginal shield, one of a pair, was displayed at the 1862 London Exhibition by Henry Moss. The shield was acquired by Henry Christy after the exhibition, and after his death in 1865 the shield was bequeathed, as part of Christy's private ethnological collection, to the British nation. This artifact is now held at the British Museum, see britishmuseum.org/collection/object/E_Oc-1808.

[126] C. S. Moss, "Starch from the Burrawang: To the Editor of The Herald", *The Sydney Morning Herald,* November 29, 1920, 11; "Arrowroot from 'Burrawang Nuts'", *The Shoalhaven News and South Coast Districts Advertiser,* July 9, 1910; H. A. Moss, "Burrawang Nuts", *The Richmond River Express and Casino Kyogle Advertiser*, July 15, 1910, 2.

[127] M. Organ, "'…a small fish in a small pond…': The Reverend W. B. Clarke (1798-1878): 200 Years On [Parts I and II]", *Journal and Proceedings of the Royal Society of New South Wales* (1998): 21; "Local and General News: Reward for Merit", *The News, Shoalhaven and Southern Coast Districts Advertiser,* July 31, 1869, 2. "Burrawang Nuts", *The Shoalhaven News and South Coast Districts Advertiser,* July 9, 1910, 2. "Arrowroot from the Burrawang Nut", *Australian Town and Country Journal*, September 24, 1870, 13.

[128] "Memorial to the Late Mr H. Moss", *The Shoalhaven Telegraph*, October 12, 1887, 2.

[129] Young, "Let them see how like England we can be", 208; "Letter to the Editor, from 'An Exhibitor'", *Sydney Morning Herald,* 11 March, 1880, 5.

> Sir, -- I am afraid a serious blunder has been committed in connection with the judging of the exhibits at the Garden Palace. In the selection of judges, it appears to me two important considerations have been overlooked.
>
> 1. From wrong or imperfect classification, or other causes, gentlemen have been appointed to act as judges of exhibits regarding the qualities of which they are utterly ignorant.
> 2. Gentlemen have accepted the onerous and responsible duty of acting as judges without apparently counting the cost.
>
> The consequence is - much and well-grounded dissatisfaction exists amongst the exhibitors … I address you with some degree of authority in this matter, as I happen to be an unfortunate judge in several classes – having innocently accepted the duty in all honesty, with a desire to do my best to promote a successful issue of the grand undertaking.[130]

The writer, who signs the letter simply, 'A Judge', goes on to express his desire that the Exhibition Commissioners incur the cost of employing competent judges to ensure exhibitors received, 'the legitimate and intelligent outcome of the whole affair, in fact as one of the rewards for the expense and trouble involved'.[131]

A common factor in all the vast displays of the Sydney International Exhibition was the desire for the British Empire to display Sydney before the nations of the world. As Henry Kendall's lyrics from the exhibition's cantata expressed,

> Shining nations! let them see / How like England we can be.[132]

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[130] "The Exhibition Awards", *The Sydney Morning Herald,* March 6, 1880, 3.
[131] "The Exhibition Awards", 3.
[132] The lyrics to The Sydney International Exhibition's official cantata by Henry Kendall, also see Henry Kendall in T. T. Reed (ed). *The poetical works of Henry Kendall*, Adelaide: Libraries Board of South Australia, 1966, 413-16.

While British Empire swaggered about the new colony, exhibitors argued and grappled over recognition for their amassed collections. Forgotten, and considered part of Australia's 'dusky', 'mysterious' yesterday, were Aboriginal people. The ethnological items they had manufactured were presented within the Ethnological Court with the narrative they were mere relics of a quickly disappearing recent past.

> The hands that crafted such tools, produced such artefacts, wove such vessels, and the voices that know the stories of the land from which such things come are silent and still – missing, presumed dead.
>
> Taken out of context, and placed artificially in someone else's scheme, these Aboriginal objects, the tools, accessories, artefacts and personal effects that hold special value, are devoid of story. They become silenced prisoners incarcerated in someone else's story – the story of empire, defeat, extermination, surrender and domestication.[133]

At the closing ceremony it was stated by the exhibition's Executive Commissioner, Mr P. A. Jennings in his formal address that

> The liberal expenditure made on the Fine Arts of painting, sculpture, and music, on scientific and ethnological collections, cannot fail to be of great educational value, and has, moreover, superadded the charm of attractions to the vast array of industrial exhibits in the departments of minerals, raw products, manufactures, and machinery.[134]

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[133] J. Leane, 'A paradise restored' in *Jonathon Jones, barrangal dyara (skin and bones)*, Kaldor Public Art Project No.32, London: Thames and Hudson, 2016, 98-99.
[134] "The Exhibition", *The Sydney Mail and New South Wales Advertiser* April 24, 1880, 786.

The Ethnological Court had undergone a harsh scaling down from what had been aforementioned originally proposed and had suffered budget cuts, yet still managed to disturb the visualisation of Australian colonial history as being a linear one, from primitive to progressive.

> The Ethnological Court in itself was the result of a series of rifts that can be understood following the development of the taxonomies reported in official records and catalogues. In the first international exhibitions, for instance, Aboriginal objects were unclassified. Then they were included in the class of 'every thing relating to the management of trees, hunting, shooting, fishing and products obtained without cultivation'. Later, Aboriginal material culture was simply framed as curios, or portable weapons, or even in the category of the arts. Until finally, within the Ethnological Court, Aboriginal objects were contained in an anachronistic space to tell at a glance a story of progress on the one hand and of extinction and dispossession on the other.[135]

In May 1880 after the exhibition had closed its doors, the Sydney International Exhibition's committee recommended permission from the Government be obtained to accommodate the exhibition of the ethnological objects displayed at The Garden Palace. A writer for the *Australian Town and Country Journal* reported the committee recommended,

> the Government be informed that some of the ethnological specimens sent to the exhibition would form valuable additions to the collection already belonging to the colony, and that this committee recommends the purchase of such of the specimens alluded to as can be obtained at a reasonable price.[136]

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[135] Accarigi, *The Ethnological Court at the Sydney Garden Exhibition*, 141.
[136] "Meeting of the Exhibition Commissioners", *Australian Town and Country Journal,* May 29, 1880, 6.

At the conclusion of the Ethnological Court's exhibition on 20 April 1880, the Australian Museum determined to permanently separate their ethnological collection from their natural history specimens. The ethnological specimens

> were left in the Garden Palace (to the alarm of Curator Ramsay, who formally requested the Trust to absolve him of responsibility for the safety of the collection now that it was beyond his control) pending their transfer to the new Technological Museum.[137]

History tells us Edward Pierson Ramsay's concerns were justified.

The Destruction: The Garden Palace Burns, 22 September 1882

The Ethnological Court's collection of material cultural items was described by the judges as having,

> in every probability, never been got together before and … would be scarcely possible to bring together again.[138]

This would prove sadly prophetic. The incredible array of Aboriginal artefacts and objects that had been procured from, and traded by, Aboriginal people over the previous century were placed in storage in the Garden Palace. All the exhibits that remained in the Garden Palace from the Ethnological Court were tragically destroyed about two and a half years after the Exhibition closed its doors.

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[137] Young, "Let them see how like England we can be", 109.
[138] "Official Record of the Sydney International Exhibition", *The Sydney Daily Telegraph*, November 30, 1881, 3.

On 22 September 1882, at around 5.40am, a fire swept through the Garden Palace, reducing it to ash within 40 minutes, along with a large catalogue of Aboriginal cultural objects. [See Figure 20] The fire was so immense that pieces of iron and burning embers were carried by the wind into Sydney suburbs. Hot cinders from the fire ignited a house at Potts Point, and fragments went so far as Darlinghurst and Rushcutters Bay. Two sheets of corrugated iron from The Garden Palace were found in Elizabeth Bay over 3 kilometres away.[139]

> In the years since 1882 the memory of the Garden Palace and its disaster faded from the consciousness of the Sydney community. The great loss felt by Indigenous communities went unresolved.[140] [See Figure 21]

The fire at the Garden Palace ironically represents - in more ways than one - the destructive effect of colonialism on Indigenous culture. In response to this forgotten tragedy of the Garden Palace's ruin and as part of the Royal Botanical Gardens bicentenary celebrations, Wiradjuri and Kamilaroi artist Jonathan Jones exhibited *barrangal dyara* (skin and bones) in September 2016. [See Figure 22] In this large scale sculptural installation situated on the Garden Palace building site in Sydney's Royal Botanic Gardens, Jones laid out 15,000 bleached ash-white shields made with gypsum, tracing the building's outline, to represent the destruction left by the fire, and the loss of innumerable Aboriginal cultural objects.[141] Jones' serendipitous use of gypsum, a soft sulfate mineral, unintentionally paid homage to Moss's large alum crystals, which were some of the last traditionally manufactured by the Worimi people.

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[139] "Destruction of The Garden Palace by Fire", *The Sydney Morning Herald*, September 23, 1882, 7.
[140] Morley, "The Garden Palace: Building an Early Sydney Icon"; J. Richards, "Indigenous art highlights Sydney's Garden Palace fire of 1882", *Australian Geographic* (30 September 2016), australiangeographic.com.au/news/2016/09/jonathan-jones-barrangal-dyara/
[141] G. Pike, "Joseph Pike – Kiama: transported to a better life", *National Library of Australia Public List*, (August 3, 2015) trove.nla.gov.au/list?id=70001

Jonathan Jones' project was physically created in three parts, the first was a native kangaroo grass meadow[142] at the heart of the former Garden Palace, the second part consisted of Jones' ash-white shields which marked out the Garden Palace's perimeter, and the final part was a soundscape in language. Jones' had invigilators who engaged the audience, through oral history, informing of the Garden Palace's lost history.[143]

Jonathan Jones was inspired to create this public art project after he went searching for cultural material from Wiradjuri and Kamilaroi country in central New South Wales. Jones states his search led him to discover

> that much of this material was lost in the Garden Palace fire. Ever since, I've been struck with the loss of our cultural material, what that loss means for our communities and how you can move forward as a culture when you can't point to your cultural heritage in museums.[144]

Jones describes the objects lost in the fire that had been displayed in the Exhibition's Ethnological Court as:

> objects that will never be seen again, objects our ancestors made and used, objects that our communities could have built upon[145].

Jones deeply feels the loss of these objects as an artist, objects that he would have liked to have had the opportunity to connect to. Uncle Charles Madden, an Elder from Gadigal country, when speaking about Jones' *barrangal dyara (skin and bones)* contemporary art project, reflects

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[142] *Themeda australis.*
[143] Jonathan Jones, "10 Questions With Jonathan Jones", Kaldor Public Art Projects Blog, April 17, 2016, http://kaldorartprojects.org.au/bloc/10-questions-with-jonathan-jones
[144] Jones, "10 Questions With Jonathan Jones".
[145] Jones, "10 Questions With Jonathan Jones".

> while the Garden Palace fire represents the loss of cultural objects, contemporary projects signal our survival. We have survived and like the waratah will be reborn.[146]

Henry Moss would have felt this loss keenly. Moss had devoted much of his personal time to curating the cultural items in his ethnological collection which was held, along with priceless other Aboriginal objects collected across the colonial frontier, in the Garden Palace building. Moss's collection included ethnological artefacts that, even in 1882, would have been difficult, if not impossible, to replace. Moss's inclusion of stringy bark, sassafras bark, white kaolin pipeclay and sizeable samples of crystallised alum evidences his desire to showcase these medical items. The Ethnological Court should have been the ideal place for Moss to showcase his ethnological collection (as all other international exhibitions had lacked the classification or taxonomy for Moss's Aboriginal artefacts). Instead of a fabulous display of Indigenous ingenuity the exhibition placed the Australian colonies on the world stage, firmly fixed in the narratives of both Social Darwinism and *terra nullius* that worked together worked to legitimise the dispossession of Aboriginal nations of their traditional lands and British colonisation.[147]

For Moss, who had agreed to display his assemblage of artefacts that had taken him decades to source and curate, the exhibition was his last. The first international exhibitions did not classify Aboriginal objects on display. Having exhibited in international exhibitions devoid of any appropriate classification, or designated space, for Moss the Ethnological Court would have certainly been a stirring prospect for him. Rather than the showcase of Indigenous technologies Moss had likely imagined, the Ethnological Court had instead been a charade.

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[146] Jones et al., *Jonathan Jones barrangal dyara*, 11.
[147] Jones, et al., *Jonathan Jones barrangal dyara*.

Had Moss been optimistic that eventually the significance of the items in his collection would be recognised by the colonial authorities, their destruction in the Garden Palace fire would have served as a second tragedy: the loss of hope.

Another crushing blow for Henry Moss in relation to the destruction of the Garden Palace was that the items in the Technological Museum, which was situated near the west nave, were also lost. The Technological Museum was allocated 40,000 square feet of space and had been near to opening at the time of the fire. A writer for *The Sydney Morning Herald* noted that the Technological Museum contained:

> all the fossils, minerals, and rocks collected by the Mining Department at the instance of the Government Geologist, and also the collection of the late Rev. W. B. Clarke.[148]

Clarke's collection was one of the most complete collections in Australia at this time. The collection, to which Henry Moss was a frequent contributor, was estimated to have been worth around £50,000 in 1882, which would equate to an astonishing sum of around $6,470,000 AUD in 2019[149].

Henry Moss's final years

Over the next few years, Henry Moss continued his work in local government and tirelessly endeavoured to improve life for his local community. Moss's love of agriculture endured[150] as did Moss's love of writing. For several years Moss acted as Nowra correspondent for newspapers the *Kiama Independent* and the *Illawarra Mercury.*[151] Moss made

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[148] "Destruction of the Garden Palace by Fire", *The Sydney Morning Herald,* October 5, 1882,11.
[149] Based on the Retail Price Index, as developed by the Australian Bureau of Statistics. See thomblake.com.au/hisdata/calculate.php
[150] "Shoalhaven A. and H. Association", *The Telegraph and Shoalhaven Advertiser*, February 17, 1881, 2.
[151] "Reminiscences and Reflections", *The Shoalhaven News and South Coast Districts Advertiser,* January 19, 1918, 3.

> contributions to the coast and city press, while some of his verse also attracted attention…At a time when many people were not adept at writing letters, Moss was on hand to help out. He was able to handle correspondence to authorities and get results.[152]

Moss also directed his energies towards the Abercorn Masonic Lodge (Lodge Abercorn No.7), of which he was a founding member and acted as secretary, regularly hosting the meetings of the Lodge at his hotel.

Despite Henry Moss suffering the devastating loss of his legacy of ethnological and geological items he had indefatigably collected and exhibited, Moss continued to indulge his passion for geology, and continued to forward samples and specimens to the Department of Mines and the Mining and Geological Museum up until the time of his decease.[153] After the 1879-80 Sydney International Exhibition Moss continued to be involved in several mining ventures. In 1879, Moss's mine at Tim's Gully, around 45 miles from Nowra, had delivered lodes yielding 20 per cent of pure copper and 60 ounces of silver per ton.[154] The Pinnacle Gold Mining Company at Yalwal, in the Shoalhaven district, reported in July 1880 they had yielded 250 ounces of gold from 124 tons of crushed stone.[155] In late 1885, Henry Moss was involved in a gold-mining venture that began drilling for gold on 10 acres of land leased near Broughton Creek at Seven Mile Beach.[156] Moss had succeeded in boring down a depth of about 5 feet before being stopped by what Moss described to the Nowra Division's Mining Registrar, Mr Warden Lovegrove, as 'quicksand'[157].

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[152] Clark, "Henry Moss", 647.
[153] "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2; "Local Mining Statistics", *The Shoalhaven Telegraph,* October 27, 1886, 2; "No title", *The Shoalhaven Telegraph*, January 7, 1886, 2.
[154] "Local Intelligence", *The Telegraph and Shoalhaven Advertiser*, August 21, 1879, 2.
[155] "Fair Field of Gold", *Newcastle Morning Herald and Miner's Advocate,* July 15, 1880, 2.
[156] "Local Intelligence: Mining on Seven-Mile Beach", *The Shoalhaven Telegraph*, December 24, 1885, 2.
[157] "Local Mining Statistics", 2.

On 18 September, 1887 Henry Moss passed away at his home, Greenhills, near Nowra, only a few days short of the fifth anniversary of the Garden Palace fire. Moss, aged 57, had been bedridden for several months, during which time doctors had attended him constantly. A writer for *The Shoalhaven Telegraph* stated Moss had suffered throughout his life from what was believed to be asthma, which the writer states was contracted during Moss's exploits.[158] Moss's lung complaint had plagued him for years. In 1869 ill health saw Moss attempt to leave his business activities by placing his hotel on the market for sale or lease.[159] Moss's prospecting activities were indeed likely the source of his health troubles, however it was unlikely that asthma was the root of his issues.[160] At this point in history the dangers of prospecting, and the detrimental effect mining could have on one's lungs, would have been unknown to Moss.

Henry Moss's death certificate lists 'dropsy' as his cause of death;[161] being an old-fashioned term for oedema. Dropsy, often a symptom of a more serious condition, indicates that Moss suffered pulmonary edema likely caused by chronic silicosis, a condition caused by prolonged exposure to silica dust.[162] Gold and copper mining put early prospectors, like Henry Moss, in horrific danger of silicosis.[163] Silicosis occurs when dust that contains

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[158] "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2; "Local Intelligence", *The Shoalhaven Telegraph*, June 23, 1881, 2; "Local Intelligence", *The Shoalhaven Telegraph*, January 31, 1884, 2; "Local and General News", *The Shoalhaven News, Ulladulla and Southern Coast Districts Advertiser,* November 9, 1872, 2.
[159] "Shoalhaven", *The Kiama Independent and Shoalhaven Advertiser,* November 11, 1869, 3.
[160] Moss's exploits mining for gold, which could be hazardous to one's health, were noted in "Sydney News", *The Maitland Mercury and Hunter River General Advertiser*, August 14, 1862, 3.
[161] Clark, "Henry Moss", 643-649.
[162] H. Barnes, N. Goh, T. Leong and R. Hoy, "Silica-associated lung disease: An old-world exposure in modern industries", *Respirology: Official Journal of the Asian Pacific Society of Respirology* 24: 12, (December 2019): 1165-1175.
[163] Crushing sandstone and mining for gold, copper, coal and tin involves exposure to silica dust.

particles of silica, a minute crystal that is found in quartz, sand and rock, is inhaled. Silicosis is:

> an untreatable disease that manifests as a process of fibrotic scarring of the lungs. Scarring progressively reduces respiratory function so that shortness of breath gives way to asphyxiating, painful disability and, finally, death.[164]

Silicosis is often misdiagnosed as pulmonary edema. In silicosis, the onset of symptoms such as dyspnea,[165] or tachypnea,[166] chest pain and coughing mimic the symptoms of asthma. In his paper "Silicosis is Australia" presented to the Silicosis Conference of 1930, Keith Moore, Director of the Division of Industrial Hygiene for the Commonwealth Department of Health, wrote, 'The conditions under which deep mining was carried out in the earlier days exacted a heavy toll of lives from those who were connected with the industry.'[167] Moss's co-workers had known him to be regularly, albeit temporarily, invalided by his respiratory condition. Moss's death caused considerable shock amongst those who knew Moss, even as he deteriorated, as it had been expected Moss would rally yet again, even after this lengthy incapacitation.[168]

[164] P. Sheldon. "Silicosis, Mechanisation and the Demise of Sydney's Rockchoppers' Union, 1908-18", *Labour History* 97 (2009): 13.
[165] shortness of breath exacerbated by exertion.
[166] rapid breathing.
[167] K. R. Moore, "Silicosis in Australia", *Silicosis: Records of the International Conference Held at Johannesburg 13-27 August 1930,* Studies and Reports, Series F (Industrial Hygiene), No. 13, London, International Labour Office (League of Nations), United Kingdom: P.S. King and Son Ltd, 1930, 295.
[168] "Obituary", *The Shoalhaven Telegraph*, September 21, 1887, 2.

Henry Moss was remembered by those who knew him as one who had 'left his mark on local history'[169] and as one who was

> generous to a fault in his desire for the good of the district. During the last few months of his illness, when he was wasted with disease and sickness … the same unending desire to serve his district seemed to be one of his greatest incentives to desire life.[170]

Moss was remembered as one who did not labour for his own interests, but instead for the welfare, benefit and good of the people in his beloved Shoalhaven community. In his private life, as in public his life, Moss 'was so honourable and straightforward, so devoted to the public good, and so free from selfish purpose'.[171]

Henry Moss's close, reciprocal relationship with the Aboriginal people of the Shoalhaven enabled him to procure his incredible ethnological collection. Moss's inclusion of the large, crystallised pieces of alum in his ethnological exhibits evidence the dual actualities that Aboriginal people manufactured these crystals, and that the sacrosanct crystals were sourced from Aboriginal people by Moss. Medicinal alum crystals were highly valued by Aboriginal people and Henry Moss's acquisition of these crystals was highly unusual given the stringent cultural lore that protected these precious items from the eyes of outliers. The value ascribed to alum crystals pertained to their use in healing. The crystals were healing and life giving, held in veneration, and had been used by *karadji* to heal a multitude of ills for millennia. I am thankful for Henry Moss's efforts to preserve these large, crystallised pieces of alum as part of the Aboriginal pharmacopoeia for, although lost in the Garden Palace fire, Moss's contribution to the Ethnological Court left with the historical record of their procurement.

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[169] "Memorial to the Late Mr. H. Moss", *The Shoalhaven Telegraph,* October 12, 1887, 2.
[170] "Memorial to the Late Mr. H. Moss", 1887, 2.
[171] "Memorial to the Late Mr. H. Moss", 1887, 2.

Conclusion

The extensive Aboriginal pharmacopoeia warranted Aboriginal people were in better health than the colonisers who arrived to dispossess them of their lands.[1] Many of the foreign pathogens that came with the colonisers were the beginning of the disparity in health and well-being that exists between Aboriginal and non-Indigenous people today. Colonisation rapidly altered traditional Aboriginal life. From first contact, the introduction of diseases such as smallpox, measles and influenza caused substantial decimation to the Aboriginal population. The spread of these imported sicknesses challenged the sacrosanctity of traditionally manufactured Aboriginal lithotherapeutic medicines. For a people who were well equipped to deal with most illnesses and health issues familiar to them, these introduced diseases may have undermined the confidence Aboriginal people had in the *karadji* and their cures.

> The [*karadji*] is an important personage, a sort of medicine man. He appears to share the authority exercised over the tribe with the very old men, who are always looked up to with awe, if not with veneration. He acts as a sort of referee or umpire in cases of dispute. He professes to cure all diseases and to possess great influence over the 'Devil-Devil.' The possession of a rock crystal, which he carries about with him in some mysterious manner acts as a charm and enables him to perform miracles. This

[1] John Gascoigne and Sara Maroske, "Colonial science and technology", *The Cambridge History of Australia*, ed. A. Bashford and S. Macintyre. Cambridge: Cambridge University Press, 2015, 438-461.

> crystal is considered sacred; no woman must look upon it. It is usually carried in his armpit, rolled up dirty rags.[2]

Another repercussion from the decimation imported diseases caused was the untimely deaths of many Aboriginal Elders and *karadji* who were important cultural knowledge holders. Many Elders and *karadji* may have died prematurely, taking with them closely guarded information regarding the chemical manufacturing process used to create lithotherapeutic remedies and their medicinal use. This likely led to a new generation of Aboriginal people living in the 'third space' between the traditional life they had known and a society being forever altered by colonisation in which the confidence they had had in the *karadji's* ability to heal most ills was irreparably eroded. This likely led to a deep fracture within the structure of traditional community life.

Through the dispossession of our lands Aboriginal people lost access to important medical resources, both botantical and mineral. While some botantical and mineral items may have been available across a broader area, certain mineral ores were unique to specific Aboriginal sacred healing sites. Loss of access to the sacred sites of Burning Mountain and Bulahdelah Mountain halted trade in Aboriginal lithotherapeutics that, for thousands of years, had healed our people from a vast number of ails and ills. Having learned of the existence of the unique mineral ores that formed the basis of the Aboriginal lithotherapeutic industry the colonists readily utilised these resources for profit. Colonisers at Burning Mountain used the healing benefits of these Aboriginal prescriptions and subsequently these were commercialised by several non-Indigenous businesspersons and consortiums.

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[2] J. F. Mann, "Notes on the Aborigines of Australia, III", *The Sydney Mail and New South Wales Advertiser,* October 6, 1883, 640.

This thesis restores the Aboriginal lithotherapeutic industries of the Greater Hunter region to the known Aboriginal pharmacopoeia. Aboriginal people across the continent were using mineral medicines acquired from their immediate environment, such as ochre, kaolin and gypsum. Minerals mined by Aboriginal people and mineral medicines were traded over great distances. For thousands of years Aboriginal people manufactured, used and traded mineral medicines. The traditional owners of parts of the Greater Hunter region of New South Wales, namely the Wonnarua and Worimi, had access to two unique sources of natural minerals which lend themselves to medicinal use. The traditional use of the mineral ore and the efficacious medicinal pills, ointments, washes, creams, crystals and tinctures made from the ore places Aboriginal people in history as the world's First Pharmacists and as the first ancient culture to have utilised both sulphur and alum medicinally.

Worimi Country holds the world's largest above ground source of alunitic rock, or alunite.[3] The summit of Bulahdelah Mountain was the location of the Worimi *karadji's* workshop where alum crystal medicines were manufactured and important ceremonies held. The Worimi traded medicinal crystals with other Aboriginal nations until the mid 1870s when the colonisers mining endeavours took over the sacred healing site of Bulahdelah Mountain. Worimi people continued their healing practices within community as the world around them changed forever. One Worimi family, the Mayers, were knowledge holders of cultural healing practices and generously provided medical assistance to the local Great Lakes community of both Aboriginal and non-Indigenous people, continuing to pass knowledge down through the generations. This continuation of traditional Worimi medical practice was

[3] Hydrated aluminium potassium sulphate. Umwelt (Australia) Pty Ltd. Bulahdelah Mountain: Aboriginal Place Nomination Assessment. A report prepared for NSW National Park and Wildlife Service. Ref: 1747/R01/V1 (June 2003): 2.2.

recognised by the non-Indigenous and Aboriginal people of the area throughout the twentieth century. Today, my family continue to source both mineral and botanical medicines from the Bulahdelah Mountain as they have for thousands of years.

Worimi manufactured alum crystals, likely traded to Aboriginal people of many different nations, were obtained in the mid 1800s from the Aboriginal people of the Shoalhaven district and, in 1879, were first displayed at the Sydney International Exhibition's Ethnological Court.

In this rapidly changing new era, Aboriginal people may have traded these once sacred cultural items to the colonists in an effort to maintain economic independence. As the nineteenth century drew closer, Aboriginal people sought other means of remuneration and cultural items were sometimes sold to colonist collectors.

The curator of the ethnological collection showcased at the Ethnological Court that held these large medicinal alum crystals was Henry Moss. It is my opinion that it was the close, reciprocal relationship with the Aboriginal people of the Shoalhaven that Moss and his wife shared that enabled him to gather his unique ethnological collection. With Moss's strong interest in geology, mining and ethnology, Moss's inclusion of the large, crystallised pieces of alum in his ethnological exhibits evidences Aboriginal people manufactured alum crystals. Through Henry Moss's efforts to preserve these large, crystallised pieces of alum as an important part of Aboriginal culture and, more specifically, the Aboriginal pharmacopoeia, we are gifted the historical record of their trade to the Shoalhaven's Aboriginal people. Henry Moss could not have foreseen that the crystals in his possession becoming some of the last the Worimi would manufacture in the traditional way. However, in 1876 a non-Indigenous

man had identified alum in a burnt stump on Bulahdelah Mountain, and in the years thereafter the colonisers would take possession of the site.

Two unique geological formations within the Greater Hunter region provided Aboriginal people with valuable mineral resources which they utilised to bring healing to their communities and Aboriginal people of other nations.

This work aims to make a valuable contribution to broader scholarship regarding the colonisation and decolonisation of Aboriginal cultural scientific knowledge, Aboriginal sacred heritage sites, and the commercialisation of Aboriginal lithotherapeutics. This work expands the knowledge of the Aboriginal use of, manufacture, and trade in Aboriginal lithotherapeutics and the significant place they hold within the traditional Aboriginal pharmacopeia. and documents the colonists' commercialisation of Aboriginal lithotherapeutics.

As an Aboriginal Worimi Biripai woman with strong connections to Worimi Country, and in particular Bulahdelah, this thesis is an opportunity for me to *karaga* – to use my voice meaningfully – to bring healing through its truth telling and to restore Indigenous sovereignty and respect for Indigenous scientific expertise. Aboriginal connection to Country goes beyond the animals, plants, people and the physical land to include our spirituality, our oral histories and our heritage. The common expression, 'healthy country, healthy people' reflects how disruptions between Aboriginal people and their connection to Country can deeply affect Aboriginal people.

Country always was, and always will be, our healer.

Recommendations

This thesis details information relating to significant healing sites and their cultural heritage. As an Aboriginal Worimi Biripai woman, I believe it is imperative that I include a number of recommendations in this work. Accordingly, the next important step forward to advance our understanding of the cultural heritage of both the sacred healing sites that are the focus of this thesis is for urgent archaeological surveys to be undertaken on both Burning Mountain and Bulahdelah Mountain.

Burning Mountain, already recognised as a unique geological formation, deserves to be acknowledged as an important and unique cultural heritage site for Aboriginal people. A sacred place of healing, Burning Mountain provided Aboriginal people of the Greater Hunter region with an economic base as an Aboriginal pharmaceutical production site and an important cultural and social base for thousands upon thousands of years. It is my recommendation that Burning Mountain receive due attention from the New South Wales Office of Environment and Heritage and be declared an Aboriginal Place. Declaring Burning Mountain as an Aboriginal Place would:

a) provide recognition for Burning Mountain's special significance to Aboriginal people,
b) help develop a deeper understanding of NSW's Aboriginal cultural heritage,
c) act as a conservation tool, and
d) deliver important legal protections for the area.

I would welcome working together with the Office of Environment and Heritage, NSW National Parks and Wildlife and the broader Aboriginal community to achieve this end.

In addition, it is my belief that the 14.5 hectare Burning Mountain Nature Reserve is of such import and significance that it warrants listing with UNESCO as a World Heritage site. Burning Mountain fulfills the criteria under which a World Heritage site may be nominated, specifically UNESCO's World Heritage Criterions: (iii), (iv) and (v) in that it is bears a unique testimony of a cultural tradition of the world's oldest surviving culture; is an example of a landscape which exemplifies a significant stage in human history and the dynamic state of Burning Mountain provides an outstanding example of land-use representative of a culture's interaction with an environment under the impacts of irreversible change. In addition, it fulfills UNIESCO's World Heritage criterions (vi), (vii) and (viii) as it is directly associated with the living traditions and the spiritual beliefs of the world's oldest surviving culture, the site contains superlative natural phenomena and is an outstanding example of a landform with on-going geological processes, significant geomorphic features and geochemical alterations to rock and soil materials.

Already recognised as an Aboriginal place, the unique geological formation that is Bulahdelah Mountain deserves to be acknowledged as publicly as having provided Aboriginal people of the Greater Hunter region with an economic base as an Aboriginal pharmaceutical production site. I would also like to see Bulahdelah Mountain listed with UNESCO as a World Heritage site. Bulahdelah Mountain fulfills the criteria under which a World Heritage site may be nominated, specifically UNESCO's World Heritage Criterions: (iii), (iv) and (v) in that it is bears a unique testimony of a cultural tradition of the world's oldest surviving culture; is an example of a landscape which exemplifies a significant stage in human history. In addition, it fulfills UNESCO's World Heritage criterions (vi), (vii) and (viii) as it is directly associated with the living traditions and the spiritual beliefs of the world's oldest surviving culture, the site contains superlative natural phenomena being the

world's largest above ground source of alunite and is an outstanding example of a landform with significant geomorphic features.

Aboriginal people's impartation of traditional lithotherapeutic medicinal lore to the colonisers was a generous, life-giving gift and should be counted as one of the first major acts of reconciliation by Aboriginal people.

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Appendices

Appendix A Henry Moss's 1879-80 exhibits

Henry Moss's exhibits as listed in the Official Catalogue of the General Ethnological Collection, 1880.

	MOSS, H., Shoalhaven, New South Wales.
1600-1603	Stone Tomahawks with handles
1604-1609	Stone Tomahawks without handles
1610-1611	Narrow Shields
1612	Broad oval Shield
1613-1615	Boomerangs
1616, 1617	Nulla Nullas
1618	Fishing-lines, with hooks of Turbo torquatus shell
1619	Spears and Womerah
1620	Sticks used for procuring fire, and bundle of grass-tree reeds
1621	Grass-tree Gum, rough
1622	Grass-tree Gum, prepared
1623, 1624	Water-vessels of Palm spath
1625	Palm Spaths used for above
1626	Rope of Palm-bark
1627	Bark used for rope making
1628	Paddles
1629	Bailers

1630, 1631 Bark Canoes

1632 Bundles Kurrajong sticks, from which fibre is obtained. Fibres, Bark, Native Rope, Alum, Large Musk Wood, Fibre for Sugar Mat, Aboriginal Implements, Gum, Primitive Canoe, Coral Moss, Arrowroot from Burrawang, Nuts of same and root, Minerals.[1]

[1] "Official Catalogue of the General Ethnological Collection". *Sydney International Exhibition, 1879: Ethnological Gallery*, Sydney: Thomas Richards, Government Printer, 1880, 23 https://media.australianmuseum.net.au/media/dd/Uploads/Documents/35779/SydIntExh1879_EthnoCat_lowres.700bf86.pdf

Appendix B 'Our Country, Our Healer' artwork, Zoe Carroll

"Our Country, Our Healer" artwork and icons used throughout by Anaiwan artist, Zoe Carroll.

Our Country, Our Healer

Artwork designed by Anaiwan artist Zoe Carroll.

"The centre of the artwork displays the mountains and the resources made available to us by Country. It depicts the way Country provides for us and how it has created a meeting place for us to retrieve its gift.

The layer outside of the central symbol shows Aboriginal workforce in retrieval of Country's gift, and denotes the culture and customs passed on for many generations, allowing us to be the knowledge holders of this retrieval and highlights our reciprocal connection and ontology to the land.

The layer on from this represents the alum and sulphur carefully and respectfully taken from Country. The footprints next to this shows our medicine men being the knowledge holders and protectors of these resources. They carried and moulded these resources into medicine and shared these with kin. The remainder of the artwork denotes how these stories are a part of our Dreaming, and how these stories have been carried on to enable the production of this work. This also shows how resources were shared through trade with other Indigenous clan groups, travelling from their own Countries to meet with the medicine men and exchange resources.

Overall, this artwork depicts customary lore, kinship, workforce, cultural knowledge, traditional medicine, and parts of our Dreaming."

Zoe Carroll

Our Country, Our Healer - by Anaiwan artist Zoe Carroll.

Artist contact: Zoe.carroll@students.mq.edu.au

Figures

Aboriginal and Torres Strait Islander readers are warned that this thesis may contain images of deceased people.

Figure 1: The thermal vent on Burning Mountain. Source credit: photograph author's own.

The sulphur and alum evident on the surface surrounding the vent on Burning Mountain.

Figure 2: Winjennia Remedies Display, the Sydney Easter Show, 1902.

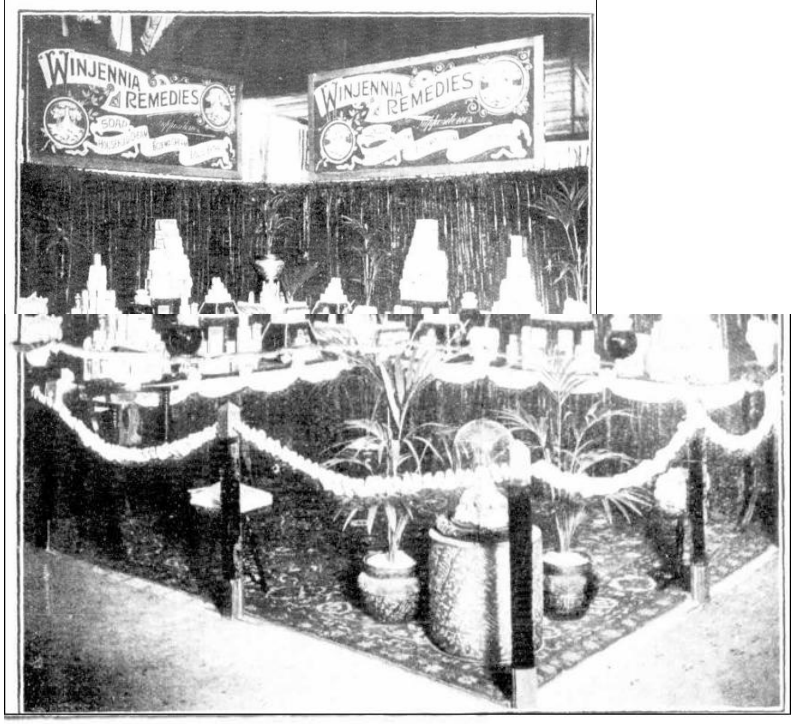
Source credit:

Sydney Mail and New South Wales Advertiser, 5 April 1902, 842.

National Library of Australia, http://nla.gov.au/nla.news-article163820156

THE WINJENNIA REMEDIES' EXHIBIT.
TODD AND DIMANT, CLARENCE-STREET, AGENTS.
(See Illustration, Page 858.)

The excellent display of these remedies made by Messrs. Todd and Dimant (the agents) is in the main pavilion, and has obtained first honours. It appears that the Winjennia remedies are manufactured from a natural product of volcanic origin found only at Wingen, between Scone and Murrurundi—a product very carefully prepared from dense sulphurous fumes. The preparations exhibited comprise Winjennia soap, Winjennia eczma cream, Winjennia cream for scalds and cuts and burns, and Winjennia extract for sore throat, blight, &c., and it may be mentioned that some of these remedies were called into request and used with excellent effect in two cases of accident on the showground on the 27th ultimo. The Winjennia Company also exhibit their remedies for horses and cattle troubles, and most interesting specimens of raw materials, photographs of Mount Wingen, testimonials from leading medical men, &c., &c. It is the first appearance of the Winjennia Company on the Royal Agricultural Showground, and a first-class first appearance it is.



WINJENNIA REMEDIES.

Figure 3: Source credit: Image courtesy of State Library of NSW, J H M Abbott, "Boiling the billy on Burning Mountain, using heat from the ground – Wingen, NSW, At Work and Play – 03896, out of copyright. See link: https://collection.sl.nsw.gov.au/record/YdmaB0j9 File Identifier: YOORaGxw76M5p.

Figure 4: Winjennia Advertising. Source credit: Winjennia Advertising, National Library of Australia, http://nla.gov.au/nla.news-article205813274, *Age*, Melbourne: 29 April 1927, 13.

Chafing and Diaper Rash, Inflamed and Sore Eyes, Styes, Sandy Blight, Ulcerated and Sore Throat and Mouth, Chapped Hands, Chilblains, Scratches, Abrasions, Bruises, Sprains, Insect Bites and Stings, Whitlows, Fistulas, Chafing, Prurigo, Pimples, Blackheads, Barcoo Rot, Excoriation, Heat Rash, Festering and Obstinate Sores, Sore Legs, Lupus, Itch, Barbers' Itch, Pruritis, Ringworm, Carbuncles, Boils, Soft Corns, Ulcers, Abscesses, and all kinds of Skin Diseases, Refractory Wounds, Chronic Sores, and External Ailments too numerous to mention.

Formed in Nature's Great Laboratory Winjennia is a priceless combination of cleansing, purifying, soothing, healing, emollient and tonic properties. **Like Gold,** the powerful basic ingredients of Winjennia are amalgamated by **the Great Alchemist of the Universe—Nature—and man cannot produce the like.**

WINJENNIA IS NOT NEW—

it was used in a crude form by the aborigines long before white men discovered Australia. Over 50 years ago settlers discovered it from the aborigines. It has been known to science and certain sections of the public for more than 30 years. During that time Winjennia has accumulated a mass of unquestionable evidence which overwhelmingly substantiates every claim advanced.

No one should be without

WINJENNIA

CREAMS - - 2/- and 2/6 Per Jar
LIQUID EXTRACT, 2/6 Per Bottle

Sold by all Leading Chemists, Grocers and Storekeepers.
Ask for "The Story of Australia's Burning Mountain."

WINJENNIA REMEDIES PTY. LTD., MELBOURNE

Figure 5: Sulfazone jar lid, featuring logo. Photograph of jar lid, label featuring logo, "Sulfazone: The Antiseptic Healer". Source credit: photograph author's own.

Figure 6: Sulfazone jar, side label. Source credit: photograph author's own.

Figure 7: Two Sacred Crystals

Enright, Walter John, "Two Sacred Crystals", *Science of Man*, v9, no.6, 1907, 153, 1907. *Science of man and journal of the Royal Anthropological Society of Australasia.* Vol. 9, No. 6, 1 June 1907. Source credit: National Library of Australia https://nla.gov.au/nla.obj-522269948/view?sectionId=nla.obj-532124754&searchTerm=Two+Sacred+Crystals+Science+of+Man&partId=nla.obj-522292073#page/n16/mode/1up/search/Two+Sacred+Crystals+Science+of+Man

DIALECT OF THE WERAIARI TRIBE.

(Concluded.)

By J. Maguire (per W. Wentworth Bucknell, F.R.A.S. Aust.).

Wean.—Fire.

Wean Burrama.—Bring the fire or light

Colin Burrama.—Bring the fire or water.

Muthung Burrama.—Bring the fire or wood.

Bombeer Donga.—Give me smoke. (The aboriginals used to smoke roots before the advent of the whites.)

Mirri Yabba.—Dog barking.

Gooni-gai, now Gundagai.—Aunt or mother's sister.

Birroong.—Far away.

Goombidgewaa.—Swimming.

Thubbo.—Head covering.

Mirrool Thubbo.—A covering for the head made of pipeclay; worn for mourning.

The aboriginals obtain a gum from the Themyal or Mowa tree, which they place in a Cogee or Coolamon, and pour water on it. They wait until it gets thick like dough, and then roll it into the shape of a sugar coar. When hunghy, they break a small piece off and place it in their mouths, and suck it like a child does a sweetmeat.

Coogee.—Singing.

Booka.—Stinking or dirty place, or a maggot.

Goonong.—Excrement.

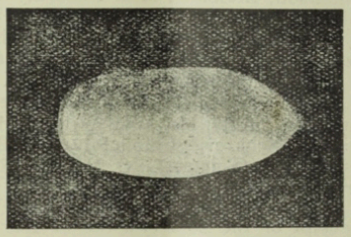
TWO SACRED CRYSTALS.

(By W. J. Enright, B.R.)

The accompanying plate shows one of two masses of aragonite, each ground into the form of an ellipsoid, which in 1881 Mrs. S. J. Skeet found in a hollow tree near Raleigh township, on the Bellinger, amongst a number of aboriginal weapons.

The dimensions and weight of stones are as follow:—Larger: Weight, 17¼oz.; length of longest axis, 3½in.; length of greatest diameter, 2 9-16in.; circumference around ends, 9 1-16in.; circumference round middle, 7¾in.

Aragonite out of which the two have been ground crystallises in the Rhombic systems, and



considerable trouble must have been taken in grinding them into their present form by reason of the great brittleness of aragonite and its tendency to break into angular fragments.

Casts of both objects were procured for the Australian Museum, but I think an effort should be made to secure the originals, which, when last

Figure 8: Sample of Bulahdelah Mountain alunite. Source credit: photograph author's own.

Figure 9: Mickey Johnson of the Shoalhaven. Title: Mickey Johnson, Shoalhaven scenes and people, ca. 1910 - photographed by C. S. Moss. Source credit: State Library of NSW, Call No. ON 436, IE No. IE379116, File No. FL379435.

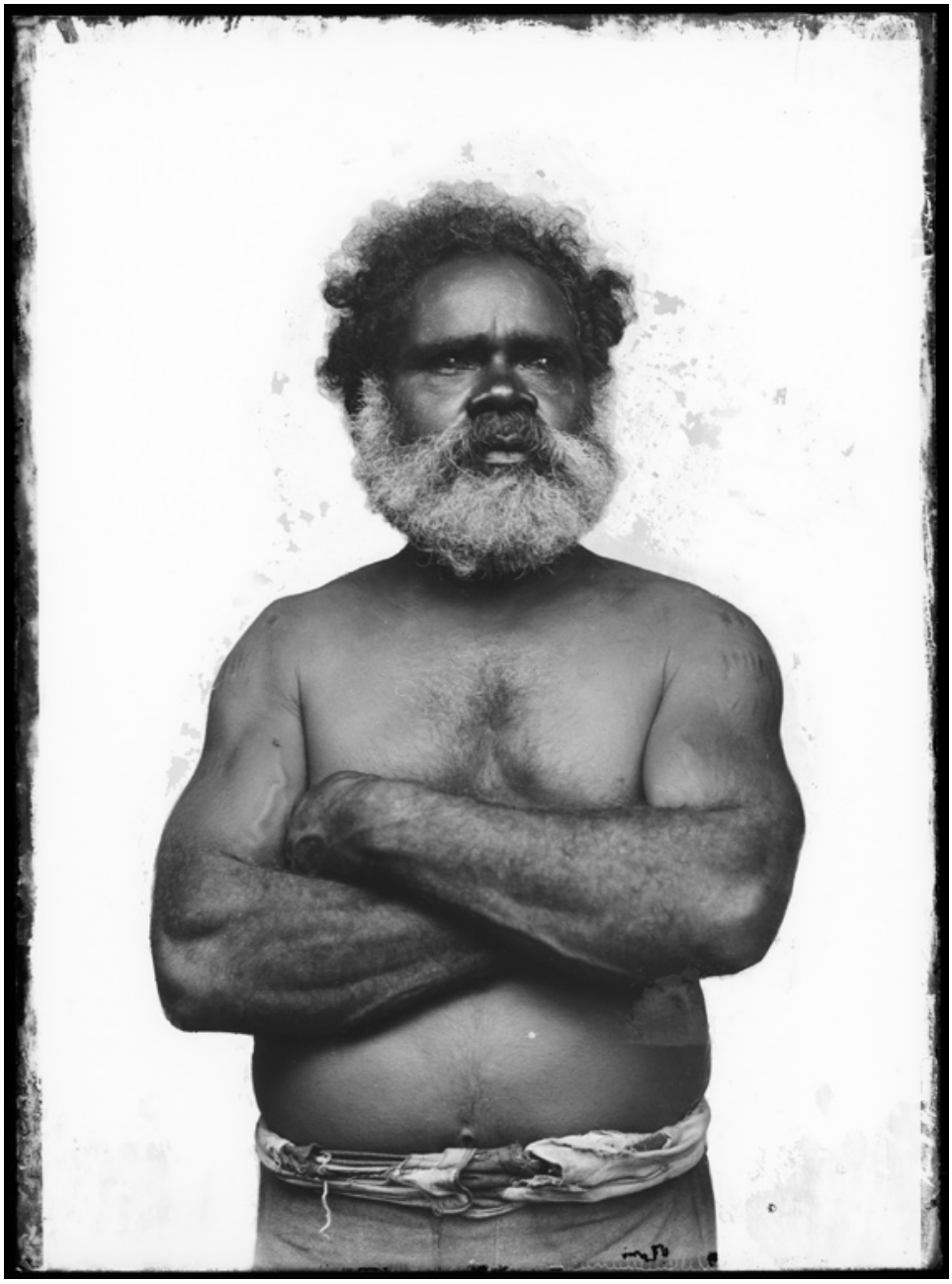
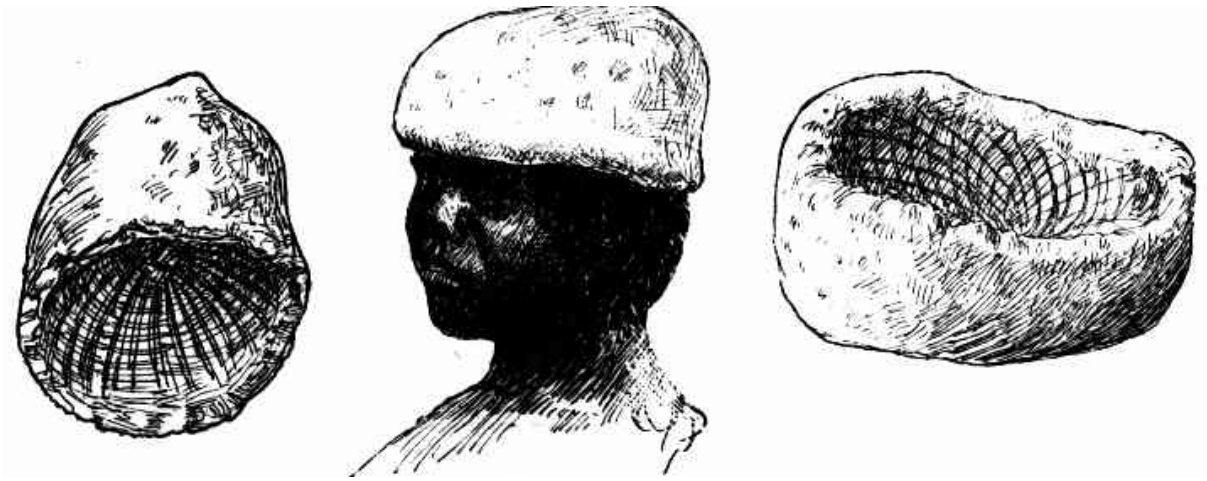


Figure 10: Widow's Kopi Caps.

"Widow's Kopi Caps. Widow's Caps", *The Sydney Mail and New South Wales Advertiser,*

July 8, 1899, 95. Source credit: https://trove.nla.gov.au/newspaper/page/16785008



"Widow's Kopi Caps"

Figure 11: Mickey Johnson in the bush. Title: Mickey Johnson in bush, Shoalhaven scenes and people, ca. 1910 / photographed by C. S. Moss. Source credit: State Library of NSW, Call No. ON 436, IE No. IE379116, File No. FL379540.

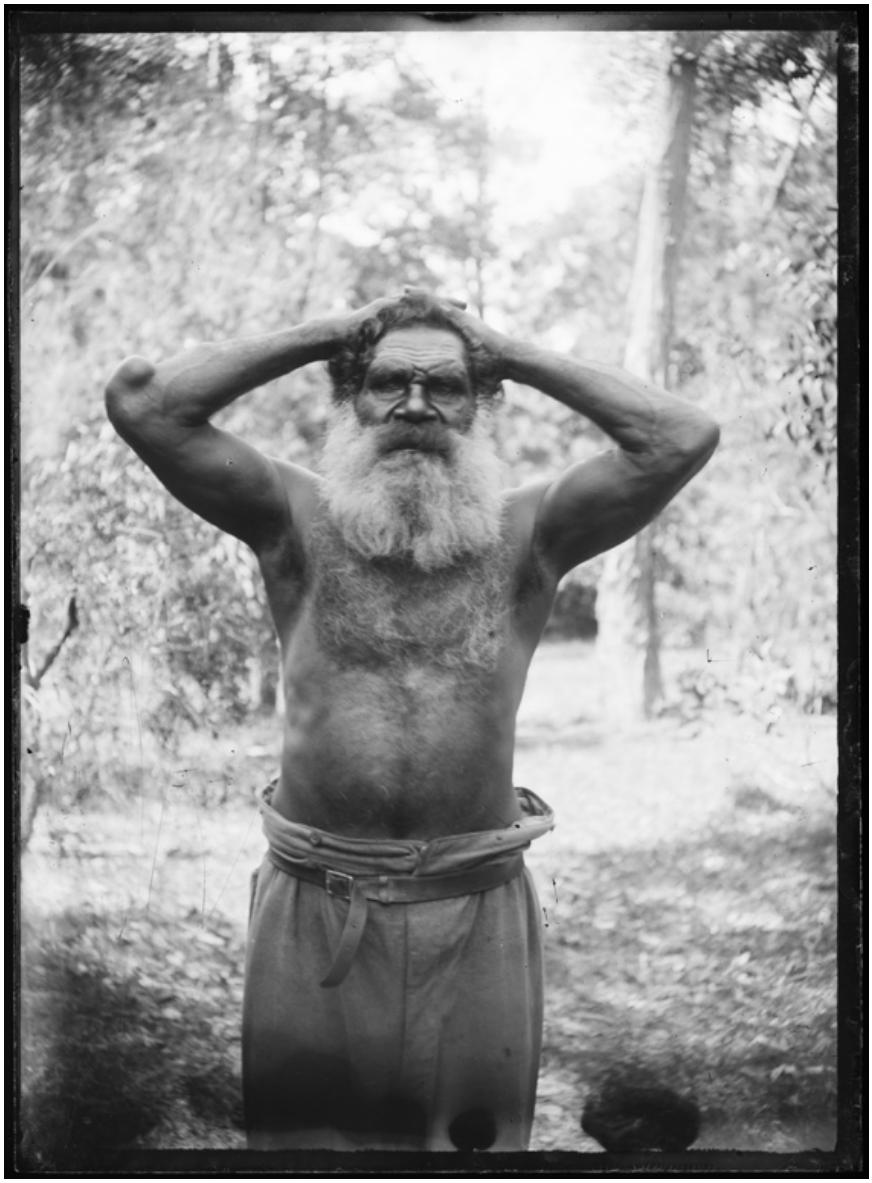


Figure 12: Source credit: Henry Moss portrait, Hawkesbury and Shoalhaven Calendar.

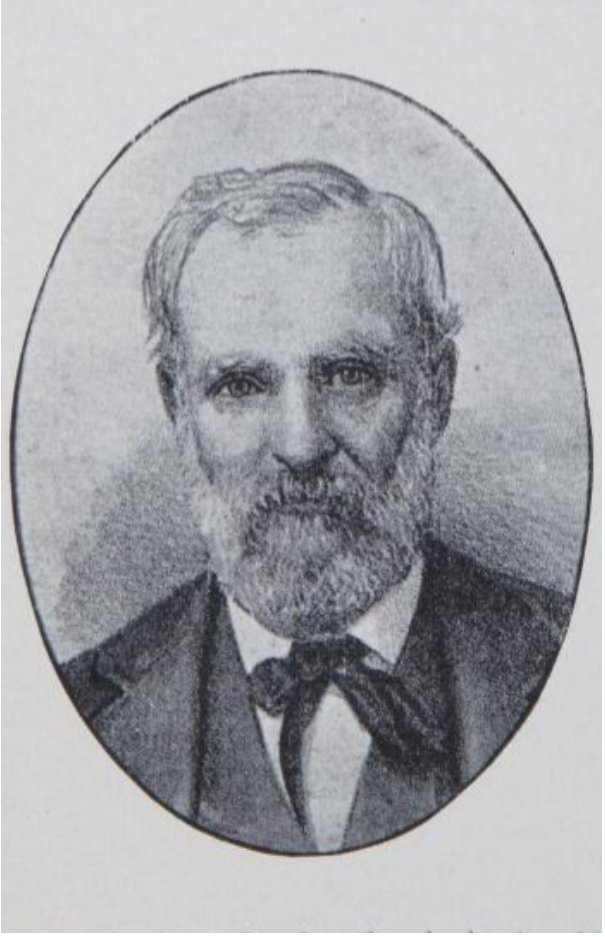


Figure 13: Sarah Moss and Henry Moss. Source credit: A. Clark, "Henry Moss: He Had A Vision For Nowra", Australian Jewish Historical Society Journal, v.11, No.4, (1992):643-649. ISSN: 0819-0615.

Mrs H. Moss

Henry Moss

Figure 14: Mineral sample, auriferous and pyritous quartz. Source credit: Powerhouse collection. Purchased 1885. Photographed by Marinco Kojdanovski.

Figure 15: The South Nave from the dome of the 1879 Sydney International Exhibition 1879, Garden Palace building.

Source credit: Image 91/1323-12. maas.museum/inside-the-collection/2013/03/04/trial-by-fire-the-formation-of-the-powerhouse-museums-co

Figure 16: The Garden Palace. From records.nsw.gov.au/archives/magazine/galleries/garden-palace-fire NRS 4481 No.2920, Reel 2718. Source credit: https://images.slm.com.au/fotoweb/embed/2022/12/d0dd276f748542dbbd73200bcf020e69.jpg See https://mhnsw.au/stories/general/garden-palace-fire/ for further information.

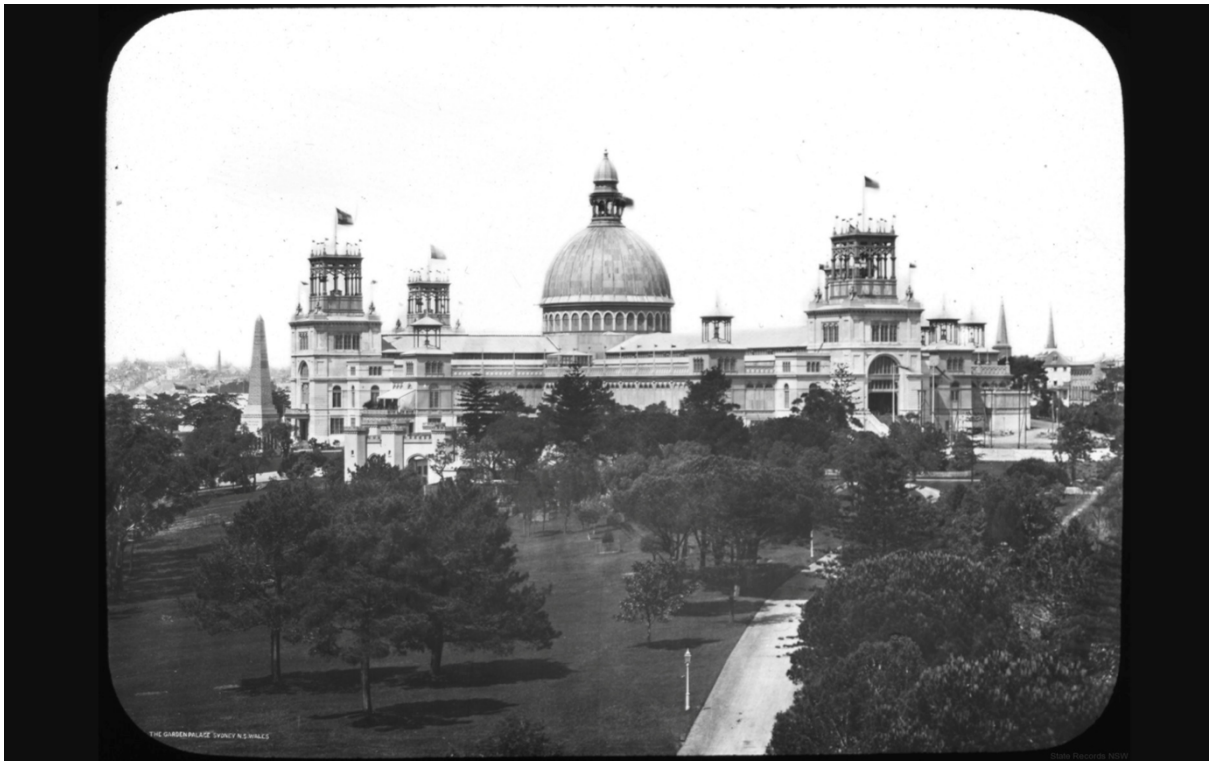


Figure 17: Ethnological Court at the Garden Palace, Sydney 1879 – 1880. Source credit:

Australian Museum Archives, Sydney, AMS351/V11460

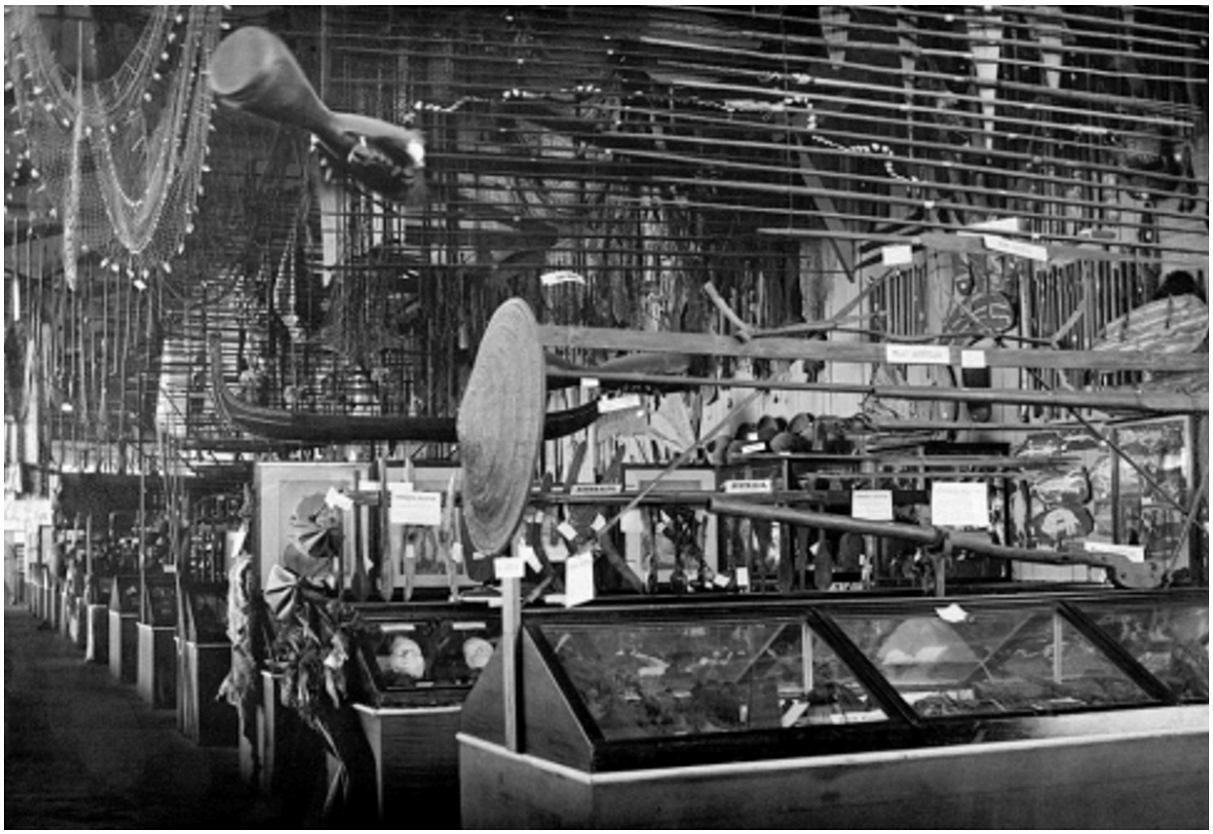


Figure 18: Macquarie Street Entrance to the Garden Palace. Photographed by Messrs Richards and Company, 1879-1880, Powerhouse Museum.

Source credit: maas.museum/inside-the-collection/2009/09/18/sydney-international-exhibition-1879/

Figure 19: The International Exhibition, Sydney, 1879-80. Source credit: This lithograph is based on the original drawing by John Thomas Richardson, the Illustrated Sydney News' chief engraver. Mitchell Library, State Library of NSW. January 1880. Call no. DL X8/3.

Figure 20: Garden Palace Fire 1882, lithograph from Illustrated Sydney News Supplement, from maas.museum/inside-the-collection/2013/03/04/trial-by-fire-the-formation-of-the-powerhouse-museums-co

Source credit: Powerhouse Museum Collection, P2239.

Figure 21: The Garden Palace.

The Garden Palace after the fire, 1882, Government Printing Office, Powerhouse Museum, 86/969. Source credit: Powerhouse Museum, from maas.museum/inside-the-collection/2013/03/04/trial-by-fire-the-formation-of-the-powerhouse-museums-co

Figure 22: barrangal dyara. Source credit: Sarah Morley, barrangal dyara (skin and bones), licensed under CC BY-NC-ND 4.0

barrangal dyara (skin and bones): Rebuilding Community

The positive developments for Sydney and the colony that stemmed from the building and its exhibition, such as public transport and community spirit, grew and took new forms. Yet, in the years since 1882 the memory of the Garden Palace and its disaster faded from the consciousness of the Sydney community. The great loss felt by Indigenous communities went unresolved.

Image 4: barrangal dyara (skin and bones). Image credit: Sarah Morley.

In September 2016 artist Jonathan Jones presented barrangal dyara (skin and bones), a large scale sculptural installation on the site of the Garden Palace Building in Sydney's Royal Botanic Garden. The installation was Jones's response to the immense loss felt throughout Australia with the destruction of countless Aboriginal objects in the fire. The installation featured thousands of bleached white shields made of gypsum that were laid out to show the footprint of the Garden Palace and represent the rubble left after the fire.