

# *Smallpox and vaccination in colonial Natal, 1850–1894*

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Smallpox is a contagious and infectious disease caused by a virus called *variola*, a Latin word which means spotted and refers to the small, pus-filled blisters that form on the body of an infected person. Relatively common in the Middle East, its occurrence in Europe was a legacy of the Islamic occupation of the Iberian Peninsula. In eighteenth-century Europe, smallpox accounted for 400 000 deaths annually. Survivors often lost their eyesight and the mortality rate among infants was excessive.<sup>1</sup> Referring to the death of Queen Mary II at the age of 32 in 1694 as a result of smallpox, historian Thomas Macaulay described the disease as ‘the most terrible of all ministers of death ... leaving on those whose lives it spared the hideous trace of its power.’<sup>2</sup>

On a limited scale and as part of a folk prophylactic, inoculation was prac-

tised in Oriental and African countries. It was introduced in England in 1721 when Lady Mary Wortley Montagu’s daughter was inoculated in London.<sup>3</sup> Inoculation concerned the insertion into a healthy person of a small amount of matter from the pustule of a smallpox-infected patient so as to induce an immune response.<sup>4</sup> By the 1770s inoculation was fairly widespread across all classes in England and was extensively practised in Ireland, Sweden, Russia and Austria.<sup>5</sup> But fear of infecting the healthy with smallpox by inoculation and thus spreading the disease accounted for the acclaim Dr Edward Jenner received for vaccination.<sup>6</sup> In June 1800, Jenner published a pamphlet in which he explained the experiments by means of vaccination that he had conducted on 23 patients. By scratching the skin of a patient with fluid from a cowpox

blister, Jenner induced immunity from smallpox. Thus, vaccination came to be regarded as a safer means of immunisation because it was in an attenuated form whereas inoculation involved the direct transmission of the smallpox virus.<sup>7</sup>

Inoculation was outlawed in Britain by the passage of the Vaccination Act (1840) which provided free vaccination for the poor. In 1853 the provisions of the Act were increased by requiring compulsory vaccination of all infants up to the age of three months. In 1867 that provision was extended to all children under the age of fourteen. Opposition to vaccination was formally initiated in 1867 with the founding of the Anti-Vaccination League.<sup>8</sup> That controversy is engaged elsewhere in this article.

Although colonisation facilitated the spread of smallpox, William Schneider has observed that ‘the history of smallpox in Africa during colonial rule is a relatively neglected subject.’<sup>9</sup> This is apparent from the fact that published and unpublished literature on colonial Natal is largely silent about the occurrence and treatment of smallpox.<sup>10</sup> Yet Natal historian Alan Hattersley observed that smallpox was ‘an ever-present menace.’<sup>11</sup> Indeed, references to health in the literature invariably concern only venereal disease.<sup>12</sup> Although missionaries and private medical doctors played a significant colonial role, apart from Dr Henry Callaway, as Norman Etherington has remarked, ‘there are virtually no other European doctors of this era who have left records of their medical practice.’<sup>13</sup> Consequently, this study draws primarily on archival records, newspaper reports and opinions, parliamentary debates, magistrates’ reports and other official publications.

By focusing on the Colony of Natal, this article aims to address the lack

of historical scrutiny of smallpox and vaccination within the African context, while drawing comparisons with conditions and responses in other colonies and in Britain and the United States. In so doing, this case study will demonstrate that the unstated but underlying motive in promoting vaccination in Natal was economic. As such, it may be posited that there was a concern to safeguard the relationship between public health and the economy of the Colony. It will also show that there was virtually no resistance to the vaccination campaigns of the Natal government, nor was there any semblance of an anti-vaccination movement. It also observes that the African majority of Natal proved compliant and co-operative with the minority white authority in being vaccinated.<sup>14</sup>

### **Inceptive measures**

By the 1840s, one of the distinctive features of Victorian cities which served to motivate emigration was their unhealthiness and their high rates of disease.<sup>15</sup> Natal, like New Zealand, was seen as an attractive emigration destination on account of its salubrious climate.<sup>16</sup> As a result, between 1849 and 1852 Natal was the destination of some 3 500 British immigrants.<sup>17</sup> Realistically and presciently, *Natal Witness* editor David Dale Buchanan raised a concern about smallpox in an editorial published on 5 July 1850:

The proverbial healthiness of the climate is calculated to prevent even the mention of such a subject as ‘public health.’ It has been prudently suggested, however, that with so large a [black] population, the introduction of such a contagious disease as the smallpox would be attended with the most fatal results.<sup>18</sup>

The potential danger a smallpox epidemic posed was apparent from the barren state of Natal's medical infrastructure: there were no hospitals and of the twelve officially licensed medical practitioners, eight were known to have left within a short time of arriving.<sup>19</sup> Thus, quarantine was seen as the best defence against disease, particularly in the light of the exposure to imported disease posed by shipping in Durban harbour. The passage of Ordinance 4 of 1854, known as the Quarantine Act, was Natal's first medical legislation.<sup>20</sup> Ordinance 9 of 1856 saw the appointment of the Natal Medical Committee comprising three or more persons 'to superintend medical concerns.'<sup>21</sup> This was followed in 1858 by the establishment of a Vaccination Board. Its membership comprised the secretary for native affairs (SNA), Theophilus Shepstone, district surgeons, resident magistrates and missionaries.<sup>22</sup> Following the appearance of smallpox in Cape Town, there were fears of it spreading to Natal via the port of Durban.<sup>23</sup> As a result, the district surgeon of Pietermaritzburg, Dr Samuel Gower, issued lengthy instructions on vaccination.<sup>24</sup>

Fluent in the language of the indigenous Zulu and familiar with their traditions and customs, between 1847 and 1875 Shepstone played a pivotal role in the administration of Africans in Natal. Historian Jeff Guy has described him as having 'a uniquely valuable understanding of the colonial world.'<sup>25</sup> His awareness of the vulnerability of the African population to smallpox and the need to act with both alacrity and caution was reflected in a circular disseminated in 1858 to all magistrates in the Colony:

The prevalence of small pox in the Cape Colony and the possibility that its ravages may ultimately extend

to this, have induced the Lieutenant Governor to attempt the introduction of vaccination among the Natives of this Colony as speedily and extensively as possible. Messengers have been sent from the Office of the Secretary for Native Affairs to all the principal Chiefs ... informing them of the existence of this disease in the neighbouring Colony ... also explaining to them the efficacy of vaccination. To carry out this measure the Lieutenant Governor proposes appointing persons, who, after a little instruction, may undertake the task of vaccination within your magistracy; but it will be for you to make such arrangements. His Excellency has not overlooked the possibility that at first the superstitious fears of the Natives may prevent them taking advantage of [what] is being offered ... but he relies upon your judgment ... to make the truth apparent to them ... It is unnecessary to say that such a measure must not be introduced to them in the shape of an order.<sup>26</sup>

Besides the obvious health threat an epidemic would pose to white colonists, implicit in Shepstone's concern for African health was the availability of African labour.<sup>27</sup> It was the predominant economic issue of the colonial era. As Jeff Guy has remarked, it was the reason 'economic insecurity remained a feature of colonial life.'<sup>28</sup> Although its availability and reliability accounted for the introduction of indentured Indian labour, primarily for the benefit of labour-intensive sugar cultivation, African labour was crucial to the development of Natal's infrastructure. A further unstated concern of Shepstone's was that of food security. Until the 1880s, white colonists depended on African cultivators for much of their corn and vegetables.<sup>29</sup> On 4 June 1872, in an editorial the *Natal Witness* stated that:

‘It must be remembered [that Africans] form the bulk of our farmers.’

A significant aspect of Shepstone’s circular was his awareness of indigenous superstition and the challenge that Western medicine posed to traditional healing. As Anne Digby has explained, traditional medicine is ‘related to and informed by the healer’s broader authority in family and polity. It is framed by social context in explaining causation and character of diseases that are conceived as a result of breaking taboos and/or angering ancestors.’ Whereas in Western medicine, consultation is individual and private, diagnosis in the African context involved the community.<sup>30</sup>

What was crucial to the success of vaccination campaigns was that variolation, a traditional form of inoculation, was practised in Africa long before the advent of colonial rule.<sup>31</sup> As Karen Flint in her comprehensive study of African healing traditions noted, the Zulus carried out vaccination ‘by themselves.’ The practice of inoculation – *jova*, in Zulu – had long been part of indigenous therapeutics. In administering vaccination as *jova*, European doctors found Zulu people compliant and co-operative.<sup>32</sup> But implied willingness to undergo vaccination should be seen in the context of the traditional order and hierarchy within Zulu society. As Shepstone himself stated, it was ‘impossible to govern effectively a Zulu population without the aid of their own institutions at the head of which are their chiefs and Headmen.’<sup>33</sup> Consequently, ‘resistance to vaccination campaigns undertaken by the Natal authorities was very slight.’<sup>34</sup>

Facilitating the process of vaccination were missionaries like Bishop Colenso and Dr Henry Callaway. As both Norman Etherington and Jeff Guy have posited, they recognised the need to

work from within the Africans’ existing views and did not simply regard all African medical practitioners as witchdoctors.<sup>35</sup> Of Callaway, who was a qualified medical doctor, Andrew Dibb has stated that he ‘did not debunk African medical practices’ and that, like Colenso, he was not culturally insensitive.<sup>36</sup>

To what extent cases of mortality resulted from smallpox, or as a result of vaccination, is difficult to quantify as legislation requiring registration of births, marriages and deaths, which applied to white colonists only, came into effect only on 1 January 1868.<sup>37</sup> Whereas researchers on this subject in Britain, such as Rosemary Leadbeater and Peter Razzell,<sup>38</sup> derived a great deal of information from parish registers, personal testimonies and memoirs, apart from occasional press items, magistrates’ reports tend to be the only source of information regarding health conditions in the various Natal districts.<sup>39</sup>

### **Contrasting scenarios**

In contrast with Shepstone’s motivation, Alison Day has remarked that the vaccination campaign conducted in New Zealand in the 1850s was intended, in part, to demonstrate ‘colonial benevolence’ to the Maoris.<sup>40</sup> In the pre-civil war years in the United States, former slave and abolitionist orator, Frederick Douglass, strongly promoted vaccination in his widely read newspaper *North Star* and its successor. High rates of vaccination were recorded among African-Americans in the northern states.<sup>41</sup>

In terms of the early years of colonialism in the southern African context, smallpox epidemics occurred in the Cape in 1713, 1755 and 1767. In 1713, a quarter of the European population and a third of the slaves perished. It also decimated the Khoisan, ‘already

reeling from the processes of colonial conquest.<sup>42</sup> The practice of vaccination was introduced at the Cape in 1801. Following the British takeover of the Cape, a Vaccine Institute was established in 1811.<sup>43</sup>

Accounts of the response to vaccination in the eastern part of the Cape Colony vary greatly. In 1841, following the deaths of several Xhosa tribesmen from smallpox in the Buffalo River area, the colonial authorities were suspected of being responsible for seeking to exterminate the Xhosa. Such thinking reflected the anathema of the Xhosa to British rule. This was the outcome of territorial confrontation between colonists and the Xhosa that, by 1850, had resulted in eight frontier wars. However, in a vaccination drive between June 1857 and mid-1859, an estimated 10 000 Xhosa were vaccinated. Only in homestead settlements where deaths had occurred from smallpox was resistance shown to vaccination.<sup>44</sup>

Significantly, as Anne Digby's research shows, despite the smallpox epidemic in Cape Town in 1882, the main focus of the Cape Public Health Act (1882) was on curbing the spread of venereal disease and the incidence of tuberculosis on the northern Cape diamond fields.<sup>45</sup> The smallpox epidemic that began in Cape Town in June 1882 caught the city unprepared. As Elizabeth van Heyningen has recorded, there had been very little attention paid to vaccination campaigns coupled with a 'long tradition of resistance to vaccination' which saw very few coloured children vaccinated. 'In legislative terms, the Colony had almost no weaponry with which to fight the disease.' Although there were no accurate figures recorded of the death rate, Van Heyningen estimates that with the inclusion of the

suburban Cape Town municipalities, 1 146 people perished out of a population of between 40 000 and 50 000.<sup>46</sup>

### **Containment factors**

Economic considerations involving labour and immigration were implicit in Natal's passage of compulsory vaccination legislation. Until the mining of large coal deposits in northern Natal, sugar production was the mainstay of Natal's economy. Eager to exploit the economic benefit of coal mining, in 1878 Governor Henry Bulwer prioritised railway construction access to the mines.<sup>47</sup> Unease among Africans in the wake of the Anglo-Zulu War (1879–1880) had a negative effect on the availability of African labour, which was particularly needed for railway construction.<sup>48</sup>

That situation was addressed by increasing indentured immigration. Thus, between 1876 and 1886 the Indian population of Natal increased from 10 626 to 29 589. That population growth included numbers of Indian entrepreneurs, called passengers, who immigrated at their own expense.<sup>49</sup> The role of Indians in Natal's economy was acknowledged in 1875 by Sir Garnet Wolseley, the Colony's administrator, when he stated that 'without them the commerce of Natal would languish and its revenue would be seriously reduced.'<sup>50</sup> Pioneer sugar planter and member of the Legislative Council (MLC) James Renault Saunders also recognised the importance of Indian immigration for Natal's economic development: 'Each shipload of coolies brings with it, indirectly, importation of capital and capitalists', he wrote.<sup>51</sup>

Referring to the increase in Indian immigration in a speech in the Natal Legislative Council on 27 October 1881, Frederick Moor MLC enquired about

vaccination. 'In importing these coolies we are also importing the possibility of disease. It is necessary for us with such a large native population to protect ourselves and the natives', he warned.<sup>52</sup> Uncertainty about the vaccinated state of the incoming Indian immigrants and the possible economic implications of an epidemic resulted in the passage of legislation on 7 August 1882 making vaccination against smallpox compulsory.<sup>53</sup> Law 3 of 1882 provided for the establishment of a Central Vaccine Board based in Pietermaritzburg. Infants had to be vaccinated within three months and certificates issued to all whose vaccinations proved successful within 21 days.<sup>54</sup>

The response to the campaign of compulsory vaccination was largely positive. In welcoming the Vaccination Law, the *Natal Witness* conceded that while vaccination did not guarantee absolute immunity from smallpox if a vaccinated person was 'beseized with the disease,' it would be 'less severe.'<sup>55</sup> In a letter published in the *Natal Witness* on 17 October 1882, Colenso reported that over the previous four weekends his son, a medical doctor, had vaccinated between 1 400 and 1 500 Africans at Bishopstowe near Pietermaritzburg. Peter Paterson, resident magistrate of Weenen district, reported that the general vaccination of Africans had definitely checked the possible spread of smallpox to which the Weenen area was vulnerable as a result of Africans returning from the diamond fields.<sup>56</sup> From the Ixopo region, south of Richmond, it was reported that the vaccination of Africans was almost completed. A similar account was recorded for the Newcastle area which, because of its proximity to the colonial border, was particularly exposed to smallpox-infected migrant

labourers returning from the diamond fields. In Durban, huts were built for African smallpox patients to be kept in isolation.<sup>57</sup> The effectiveness of Law 3 of 1882 continued to manifest itself in 1884 with resident magistrates recording minimal smallpox infections.<sup>58</sup> Typically, the magistrate for Estcourt reported that 'all natives in the County vaccinated. No smallpox cases.'<sup>59</sup>

A high degree of vigilance prevailed in containing smallpox. This was apparent from magistrates' reports from around the Colony. Exemplifying that was a special meeting of the Natal Harbour Board convened in August 1884 to address the fact that three Tonga workers from Delagoa Bay in Mozambique were found to be infected with smallpox on their arrival in Durban harbour. The board ordered the three men and their fellow labourers to be isolated at the lazaretto on the Bluff headland. The board also required the fumigation of the *Lady Wood* which had brought them to Durban.<sup>60</sup>

While containment of smallpox within Natal appeared to be in hand, the Colony's vulnerability to infection from beyond its borders from migrant labourers became the subject of legislative attention. John Robinson MLC asked what the government was doing about the appearance of smallpox in the Harrismith area of the Orange Free State Republic, which was contiguous with the Natal border.<sup>61</sup> Alarmed by the situation, the Council passed legislation 'to make provision for enforcing quarantine regulations on the inland borders of the Colony' – Law 2 of 1884, section 4 of which specified that anyone who wilfully introduced smallpox into the Colony could be fined up to £100 or sentenced to six months imprisonment.<sup>62</sup> Concerns expressed about the spread

of smallpox by Africans returning to Natal from the diamond fields were well-founded as research by Russel Viljoen has shown.<sup>63</sup> The disease was first diagnosed in Kimberley in November 1883 and was believed to have derived from migrant Mozambican labourers.<sup>64</sup> Mining magnate and capitalist, Cecil Rhodes, alarmed at the peril smallpox posed in the event that the mines might have to be closed, insisted that the contagion be hushed up and dismissed as chickenpox. As a result, a conspiracy of silence prevailed in which the local medical profession allowed itself to be manipulated by the capitalist elite. The severity of the smallpox outbreak was apparent by the deaths of an estimated 600 African mineworkers during the period 1883–1884.<sup>65</sup>

### **Opposition and resistance**

Acceptance of vaccination was not universal. A *Natal Witness* editorial published on 18 March 1882 noted that vaccination was ‘a question which increasingly agitates the public mind in England.’ Illustrating the controversy, the paper cited the fact that out of 15 171 smallpox cases handled by a London hospital between 1876 and 1880, no fewer than 11 412 had previously been vaccinated. The passage of the Vaccination Act (1867) in Britain, which made vaccination compulsory for children under the age of fourteen, provoked negative responses. Regarded as an infraction on the liberty of the individual, it resulted in the formation of the Anti-Compulsory Vaccination League and the London Society for the Abolition of Compulsory Vaccination. Their opposition was premised on arguments that included better sanitation, the removal of ‘filth’ and denial of the specificity of smallpox as a disease.<sup>66</sup>

An anti-vaccination movement did not materialise in New Zealand, but the Public Health Acts of 1900 and 1908 allowed those who objected to vaccination to be granted special dispensation.<sup>67</sup> In the United States, between 1879 and 1900 several anti-vaccination movements were formed and enjoyed success in repealing compulsory vaccination laws in California, Illinois, Indiana, Wisconsin, West Virginia, Minnesota and Utah. Besides arguing that vaccination was an infringement of basic human rights, most of the opposition was aimed at the American Medical Association (AMA) which licensed medical practice. Opponents, who were mainly homeopaths, claimed the AMA denied them the right to earn a living practising medicine because they objected to vaccination.<sup>68</sup>

There was no organised anti-vaccination movement in Natal. But there was resistance among white colonists to their children being vaccinated and an initial degree of reluctance on the part of Indian parents. During the 1885 session of the Legislative Council, five separate petitions opposing Law 3 of 1882 were tabled totalling 1 147 objectors.<sup>69</sup> One of the petitions claimed that the law was ‘unnecessary, unjust and cruel’ and that prosecutions amounted to ‘persecutions.’<sup>70</sup> That resistance was evident in the fact that between 1882 and 1885 only 3 082 whites were vaccinated when by 1885 the white population of Natal was 36 701.<sup>71</sup> During the same period, however, 180 005 Africans were vaccinated.<sup>72</sup>

In criticising those who opposed compulsory vaccination, R.A. Green, MLC for Newcastle, stated: ‘To argue that the people of any country should be subject to this terrible disease because of the fancies of a small portion of the



community is really going back a hundred years.’ Colonial secretary Mitchell stated that not a single case had been brought forward of any child or adult who had suffered from the effects of vaccination and that if the word compulsory was removed from the Bill, it would defeat the very essence of what the legislation intended.<sup>73</sup>

During the extensive smallpox outbreak of 1893–1894, white colonists again manifested indifference to vaccination. This was noted by the Durban district surgeon and his colleagues in the Umlazi, Klip River and Polela districts where very few white children were brought forward for vaccination.<sup>74</sup> Besides the lack of law enforcement, what was apparent was the reluctance of vaccination officers to confront defaulting parents. From that, one might conclude that officials may have feared antagonising the social lions of their districts.

There was an initial reluctance among Indians to have their children vaccinated. In his report for 1889, the protector of Indian immigrants wrote: ‘Many Indians disregard vaccination altogether.’<sup>75</sup> However, that situation appeared to have improved based on subsequent reports.<sup>76</sup> In his 1893–1894 report the district surgeon for Durban, noted that most Indians had been vaccinated.<sup>77</sup> There were no further reports at the time of reluctance on the part of Indians to be vaccinated.<sup>78</sup>

### **1893–1894 outbreaks**

An extensive outbreak of smallpox occurred during the 1893–1894 period.<sup>79</sup> This was first officially recognised in Circular No. 25 issued on 2 June 1893 by the colonial secretary’s office. It noted that a smallpox epidemic had occurred in Johannesburg and was spreading across Natal as Africans returned

to their homes from the Witwatersrand gold mines. Resident magistrates were urged to see to it that all Africans were vaccinated.<sup>80</sup> At about the same time, the acting mayor of Durban asked that quarantine measures be established at the Colony’s borders as up to 500 Africans were leaving each month for the goldfields with similar numbers returning.<sup>81</sup> His concerns were addressed by Government Notice no. 283 issued on 13 August 1893. Based on the regulations framed under Law 2 of 1884, it aimed to clamp down on the influx of infected persons into the Colony.

The seriousness of the situation was borne out by the reports of resident magistrates and occasional press reports. From Msinga in the Dundee division it was reported that five Africans had contracted smallpox.<sup>82</sup> The Estcourt magistrate informed the colonial secretary that he had placed the entire *kholwa* district under quarantine as a result of the return of some infected Africans from Johannesburg.<sup>83</sup> Fourteen cases were reported from the Rottchers mission station called Muden, twenty miles from Greytown.<sup>84</sup> It was subsequently reported that six of the victims had died.<sup>85</sup> Smallpox cases were identified in the Sundays River district of Weenen.<sup>86</sup> A subsequent report indicated that the disease was spreading ‘at an alarming extent,’ according to the district surgeon.<sup>87</sup> In the Newcastle district there were 123 cases and nine deaths. Outbreaks occurred in the Boston area, Richmond, Lions River and the Umgeni area near Pietermaritzburg.<sup>88</sup> Twenty infections were identified on the farm Vaalkrantz in the Colenso area.<sup>89</sup>

A sense of urgency coloured Assistant Colonial Secretary Christopher Bird’s circular minute of 12 October 1893. It instructed all district surgeons to seek



the utmost co-operation with African headmen and chiefs in promoting vaccinations. ‘You will take steps to strictly enforce the penalties for breach of quarantine regulations ... You will communicate these instructions to the Administrator of Native Law in your Division’.<sup>90</sup> The spate and cost of vaccinations was also of growing concern to Colonial Secretary Haden. In a letter to the colonial treasurer, he asked for an additional £500 for vaccinations, noting that all the money budgeted for vaccinations had been spent.<sup>91</sup> Between 1 January 1882 and 1 September 1893, £13 256 was spent on the administering of vaccinations.<sup>92</sup> Before the year was over, Haden requested a further £500.<sup>93</sup>

But the outbreaks were contained. As the reports of district surgeons repeatedly stated, the African population was co-operative and accepting in the belief that vaccination was in its best interests.<sup>94</sup> Between 1891 and 30 June 1893, 40 087 Africans were vaccinated.<sup>95</sup> As 1893 drew to a close, there was a distinct absence of news on smallpox from country areas such as Estcourt, Greytown, Howick, Ixopo, and Charles-town on the Transvaal border. While that seemed to indicate that the threat had abated, it was not the case.<sup>96</sup>

Fresh fears of the spread of smallpox came from the Newcastle district in January 1894. The district surgeon reported 34 cases amongst 118 Africans residing in 39 huts clustered in eight homesteads scattered across an area of twelve miles. In terms of logistics and available resources, placing the unaffected 84 Africans in quarantine and ensuring their isolation was a tall order as without sufficient manpower, absolute isolation was impossible.

Reports of deaths from smallpox came from Richmond where there were

five fatalities and from Nqutu, in the Dundee district, where there were ten deaths.<sup>97</sup> Circular no. 5 issued on 12 February 1894 by the colonial secretary’s office indicated that the smallpox threat was far from over. It required all resident magistrates to ensure that they had adequate supplies of lymph. Despite £1 500 having been freshly allocated for vaccinations, in April the colonial secretary requested a further £1 250 for the task.<sup>98</sup>

In his opening address to the Legislative Assembly in April 1894, Governor Sir Walter Hely-Hutchinson placed the smallpox scare in perspective:

The outbreak of small-pox amongst the native inhabitants in the upper and midland districts has been met by vigorous measures of suppression. The cost of these measures has been considerable but I am able to inform you that through the good judgement and zeal of the Medical Officers and of the Police, the spread of the disease has been arrested, and that there seems every reason to hope that it will soon disappear. No case has been reported in any town or village nor has any white person suffered from the epidemic.<sup>99</sup>

But smallpox did not disappear. Alan Hattersley was correct to refer to it as an ‘ever-present menace’.<sup>100</sup> Before the end of the century, fresh outbreaks occurred. The pervasiveness of the contagion was apparent from a summary of its effects within Natal and Zululand for the period 1 July 1898 to 11 May 1899: 651 cases, 90 deaths with half of those occurring in the Polela district and 1 862 persons quarantined in 77 quarantine areas.<sup>101</sup>

## Conclusion

It could be argued that the relatively sound management of Natal, which included health, was an implicit contributing factor to the substantial investments that were made in the labour-intensive sugar and coal industries at that time. In 1891 the South Coast-based sugar enterprise, Reynolds Bros Limited, was launched on the London Stock Exchange with share capital of £100 000.<sup>102</sup> In 1895, a second sugar consortium was launched, the North Coast-based Natal Estates which held its founding meeting in London.<sup>103</sup> The Northern Natal coal industry also realised substantial corporate growth and capital investment.<sup>104</sup>

In his April 1894 address, Governor Hely-Hutchinson made reference to the cost incurred combating the smallpox threat. Although the auditor-general's reports for 1893–1894 do not refer to vaccinations specifically, from figures cited earlier it is apparent that £19 006 was spent during the period 1882 to April 1894.<sup>105</sup> The vast majority of the beneficiaries of vaccination were African. Since 1849, when hut tax was first introduced at seven shillings per hut per annum and increased to fourteen shillings in 1875, Africans had made a substantial financial contribution to the Colony. In 1886, for example, the African contribution to colonial revenue was £72 299, the third largest contribution after customs and railways.<sup>106</sup> By 1899, their contribution had grown to £176 000.<sup>107</sup> That contribution constituted a further aspect of the economic importance of safeguarding the health of the African population and reflected the economic thread implicit in vaccination policy. Ironically and unfortunately, the willingness of Africans to be vaccinated did not extend to having their cattle inoculated against the rinderpest scourge

of 1896–1898. Their refusal, despite the offer of government assistance, cost Africans an estimated 90% of their livestock.<sup>108</sup>

From the tax revenues cited, it is obvious that the voteless and voiceless African population subsidised developments in the Colony, yet received tokenism in return.<sup>109</sup> The expense incurred to limit the effects of smallpox on the African population, therefore, was not only morally and financially more than justified, but amounted to an unwitting, limited act of reciprocity by the colonial government.

In terms of the broader discussion of the relationship between Western medicine, disease and colonial rule, a corollary of Western health measures was that they served to promote social segregation. This was blatantly apparent in Durban where municipal health bylaws were used to marginalise Indian businesses and residences. 'Careless sanitation habits' were cited by medical officers to justify eviction.<sup>110</sup> Anne Digby has referred to district surgeons as 'prime agents working to advance imperial civilisation by combating disease and unsanitary habits.'<sup>111</sup> Elaborating on that view, Maynard Swanson has argued that fears and rumours of epidemics 'provided tinder for inflaming white racial antagonism' towards what was termed the 'Asiatic menace.'<sup>112</sup> However, the essential point about discriminatory legislation aimed at Indians concerned their status in the eyes of colonial rule: they were welcome in Natal as labourers, but not as settlers.<sup>113</sup>

By the later Victorian period, it was apparent that Shepstone's concerns regarding the African population on the issue of smallpox had been positively addressed. Moreover, his fears of resistance by Africans to vaccination were

not realised. In contrast, the application of Western medicine became (and continues to be) controversial amongst Aborigines in Australia. As Suzanne Parry has shown, in the Northern Territory, settler incursion and control measures conflicted with traditional Aborigine customs and practices. Consequently, Aborigines were severely affected by diseases introduced through white settlement.<sup>114</sup>

With established administrative structures such as magistracies, district surgeons and vaccine boards linked within a growing rail and telegraph infrastructure, colonial Natal had the capacity to deal relatively effectively with smallpox outbreaks. This was not the case in sub-Saharan Africa generally where the impact of smallpox epidemics on the indigenous populations of Sudan, Rwanda-Burundi and Ethiopia was devastating.<sup>115</sup> As Maureen Malowany has lamented, even ‘research is constrained by the lack of verifiable data’ in those areas.<sup>116</sup> In that respect she has noted the role of medical anthropologists in projecting the study of disease and medicine into the mainstream of historical enquiry.<sup>117</sup>

Compared with Queensland and New South Wales in Australia, Natal displayed decisiveness when, in 1882, it legislated compulsory vaccination. Although there were periodic smallpox scares in Queensland, there was never a consistent vaccination policy until the Vaccination Act was introduced in 1900.<sup>118</sup> Despite a serious smallpox outbreak in Sydney in 1881–1882, which resulted in 40 deaths from 154 cases,<sup>119</sup> the colony of New South Wales never legislated compulsory vaccination.<sup>120</sup>

Despite its large African population and its smaller budget and civil service compared to the Cape Colony,

Natal appeared to manage the threat of smallpox far better than the Cape. That observation may be substantiated by Elizabeth van Heyningen’s research which shows that the Cape, unlike Natal, lacked centralised control of vaccination management. As a result, it was left to local authorities, which did very little as they could not afford the costs. Towns did not have health officers and where health regulations existed, they were ‘rudimentary in the extreme.’ Thus, she concluded, ‘in legislative terms, the Colony had almost no weaponry with which to fight the disease.’<sup>121</sup>

## NOTES

- 1 Stefan Riedel, ‘Edward Jenner and the history of smallpox and vaccination’ *Journal of Baylor University Medical Center* January 2005, p. 1.
- 2 Thomas Babington Macaulay, *The History of England, Vol. IV* (London: Folio Society, 1965), p. 115.
- 3 Peter Razzell, *Essays in English Population History* (London: Caliban Books, 1994), p. 15.
- 4 Rosemary A. Leadbeater, ‘Experiencing smallpox in eighteenth century England’ (PhD Oxford Brookes University, 2015), p. 7.
- 5 Razzell, *Essays in English Population History*, pp. 20–21.
- 6 Deborah Brunton, ‘Smallpox inoculation and demographic trends in eighteenth century Scotland’ *Medical History* 36 (1992), p. 403; Leadbeater, ‘Experiencing smallpox in eighteenth century England’, p. 8. Razzell maintains that inoculation was superior to vaccination because it conferred a life-long immunity owing to the larger amount of virus applied. He also argues that inoculation was effective in combating smallpox well before the advent of vaccination (Razzell, *Essays in English Population History*, pp. 28, 39).
- 7 Brunton has noted that a debate between historians and demographers continued into the twentieth century over the impact of inoculation on the mortality rate of smallpox (‘Smallpox inoculation and demographic trends in eighteenth century Scotland’, p. 403). Razzell regards vaccination as ‘attenuated’ and therefore incapable of affording long-term immunity. Of Edward Jenner, he wrote: ‘We must conclude that [his] contribution to the history of medical innovation has been

- greatly over-estimated and at the most he was one of the many innovators in the technique of inoculation against smallpox' (*Essays in English Population History*, p. 50).
- 8 Dorothy Porter and Roy Porter, 'The politics of prevention: anti-vaccinationism and public health in nineteenth century England' *Medical History* 32 (1988), pp. 232–233, 235.
  - 9 William H. Schneider, 'Smallpox in Africa during colonial rule' *Cambridge Journal of Medical History* 53(2) 2009, p. 193.
  - 10 Joy B. Brain, 'Health and disease in white settlers in colonial Natal' *Natalia* 15 (1985), pp. 64–78; Edgar H. Brookes and C. de B. Webb, *A History of Natal* (Pietermaritzburg: University of Natal Press, 1965); Edmund H. Burrows, *A History of Medicine in South Africa* (Cape Town: A.A. Balkema, 1958); Ashwin Desai and Goolam Vahed, *Inside Indian Indenture: A South African Story, 1860–1914* (Cape Town: HSRC Press, 2010); Anne Digby, *Diversity and Division in Medicine: Health Care in South Africa from the 1800s* (Bern: Peter Lang, 2006); Uma Shashikant Dhupelia, 'Frederick Robert Moor and native affairs in the Colony of Natal, 1893–1903' (MA, University of Durban-Westville, 1980); Graham Dominy, *Last Outpost on the Zulu Frontiers: Fort Napier and the British Imperial Garrison* (Champaign: Illinois University Press, 2016); Norman Etherington, 'The rise of the *kholwa* in south east Africa: African Christian communities in Natal, Pondoland and Zululand, 1835–1880' (D.Phil., Yale University, 1971); Norman Etherington, 'Missionaries, doctors and African healers in mid-Victorian South Africa' *South African Historical Journal* 19 (1987); Karen Flint, *Healing Traditions: African Medicine, Cultural Exchange and Competition in South Africa 1820–1948* (Pietermaritzburg: University of KwaZulu-Natal Press, 2008); Bill Guest and John M. Sellers (eds), *Enterprise and Exploitation in a Victorian Colony: Aspects of the Economic and Social History of Colonial Natal* (Pietermaritzburg: University of Natal Press, 1985); Jeff Guy, *Theophilus Shepstone and the Forging of Natal* (Pietermaritzburg: University of KwaZulu-Natal Press, 2013); Alan F. Hattersley, *The British Settlement of Natal* (Cambridge: Cambridge University Press, 1950); Alan F. Hattersley, *A Hospital Century: Grey's Hospital, Pietermaritzburg 1855–1955* (Cape Town: A.A. Balkema, 1955); John Lambert, *Betrayed Trust: Africans and the State of Colonial Natal* (Pietermaritzburg: University of Natal Press, 1995); Roy Macleod and Milton J. Lewis (eds), *Disease, Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London: Routledge, 1988); Jeremy Martens, 'Almost a public calamity: prostitutes, "nurse-boys", and attempts to control venereal disease in colonial Natal, 1886–1890' *South African Historical Journal* 45 (2001); Nontobeko Ngubane, 'Divided facilities: early cottage hospitals and the provision of healthcare facilities in Natal, 1880–1910' (M.Soc.Sc., University of KwaZulu-Natal, 2018); Andrew Offenburger, 'Smallpox and epidemic threat in nineteenth century Xhosaland' *African Studies* 67(2) 2008; Nigel G. Penn, 'The northern Cape frontier zone, 1700–1815' (D.Phil., University of Cape Town, 1995); John Robinson, *A Lifetime in South Africa: Being the Recollections of the First Premier of Natal* (London: Smith, Elder, 1900); Schneider, 'Smallpox in Africa during colonial rule'; Mary P. Sutphen and Bridie Andrews (eds), *Medicine and Colonial Identity* (London: Routledge, 2003); Elizabeth B. van Heyningen, 'Public health and society in Cape Town, 1880–1910' (D.Phil., University of Cape Town, 1989); Russel Viljoen, 'The "smallpox war" on the Kimberley diamond fields in the 1880s' *Kleio* 35 (2003); Monica Wilson and Leonard Thompson (eds), *Oxford History of South Africa, Volume 1* (Oxford: Clarendon Press, 1969); Marcia Wright, 'Public health among the lineaments of the colonial state of Natal, 1901–1910' *Journal of Natal and Zulu History* 24 (2006).
  - 11 Hattersley, *A Hospital Century*, p. 60.
  - 12 For example, official concern in Natal regarding the spread of venereal disease was recorded in 1877 but in terms of legislation there was no follow-up. In 1886, a report was produced for the Pietermaritzburg Corporation as a result of growing concern for the increase in prostitution and venereal disease. By 1889, magistrates' reports from Klip River County, Weenen and Lower Tugela expressed alarm at the spread of venereal disease. In 1890 the Contagious Diseases Bill (no. 19) was passed in a bid to curb the spread of venereal disease which acting Colonial Secretary Albert Hime stated was 'undermining the health of the Native population' (Pietermaritzburg Archives Repository (PAR), CSO 623, No. 4777, 12 November 1877); Dominy, *Last Outpost on the Zulu Frontiers*, pp. 135, 221; *Supplement to the Blue Book for the Colony of Natal*, 1889, pp. B82, B102, B22; *Debates of the Legislative Council* 14 (1890), pp. 281, 458; Martens, 'Almost a public calamity', pp. 27–36.
  - 13 Etherington, 'Missionary doctors and African healers in mid-Victorian South Africa', p. 77.

- 14 In 1870 the African population was 257 787 and the white population was 17 737. By 1897 the African population stood at 724 848 and whites numbered 50 241 (Colony of Natal, *Statistical Year Book*, 1907, p. 3).
- 15 Marilyn and Colin Pooley, 'Health, society and environment in Victorian Manchester' in *Urban Disease and Mortality in Nineteenth Century England* edited by Robert Woods and John Woodward (New York: St Martin's Press, 1984), p. 148.
- 16 Natal's first bishop, J.W. Colenso, regarded Natal's climate as providing 'every inducement for emigration.' (John William Colenso, *Ten Weeks in Natal: A Journal* (Cambridge: Macmillan, 1855), p. 80; Alison Day, 'Chastising its people with scorpions: Maoris and the 1913 smallpox epidemic' *New Zealand Journal of History* 33(2) (1999), p. 181.
- 17 Hattersley, *British Settlement of Natal*, p. 315.
- 18 The African population in 1852 was estimated at 112 988 and the white population was 7 629 (Colony of Natal, *Statistical Year Book*, 1907, p. 3).
- 19 Burrows, *History of Medicine*, p. 205.
- 20 *ibid.*, p. 212.
- 21 *Natal Government Gazette* 8(409) 7 October 1856.
- 22 The word 'native' has acquired derogatory connotations, as Jeff Guy points out in *Theophilus Shepstone and the Forging of Natal*, p. 12. However, he argues that in the context of those times 'native' provides 'an accurate, non-racial' juxtaposition to the word that opposed it, namely, 'settler'.
- 23 Editorial, *Natal Star*, 16 October 1858.
- 24 Natal Government Notice no. 68, 1858. One of Dr Gower's suggestions on vaccinating was that anything could be used as a lancet to apply the lymph – even a tooth from a comb.
- 25 Guy, *Theophilus Shepstone and the Forging of Natal*, p. 2.
- 26 PAR, 1/LDS 3/3/2 H6, 12 October 1858. In 1859 the African population was estimated at 148 590 (Colony of Natal, *Statistical Year Book*, 1907, p. 3).
- 27 Etherington, 'The rise of the *khohwa* in south east Africa', pp. 61–62.
- 28 The first public meeting of the Natal Political Association, held in Pietermaritzburg in October 1851, concerned the 'kafir labor question' (Guy, *Theophilus Shepstone and the Forging of Natal*, pp. 196, 493).
- 29 John Lambert, 'The undermining of the homestead economy in colonial Natal' *South African Historical Journal* 23 (1990), p. 61.
- 30 Digby, *Diversity and Division in Medicine*, pp. 277, 282.
- 31 Schneider, 'Smallpox in Africa during colonial rule', p. 194.
- 32 Flint, *Healing Traditions*, pp. 45, 63.
- 33 Ruth Edgecombe, 'Bishop Colenso and the Zulu nation' *Journal of Natal and Zulu History* 3 (1980), pp. 16–17.
- 34 Guy, *Theophilus Shepstone and the Forging of Natal*, p. 303. John Lambert in his pioneering study of the indigenous homestead economy in Natal during colonial times, *Betrayed Trust*, makes no mention at all of smallpox and vaccination.
- 35 Etherington, 'The rise of the *khohwa* in south east Africa', p. 113; Jeff Guy, *The Heretic: A Study of the Life of John William Colenso* (Pietermaritzburg: University of Natal Press, 1983), p. 45.
- 36 Andrew M.T. Dibb, 'An historical study of the diocese of St John of the Church of the Province of South Africa with special reference to Bishop Callaway's vision of a black clergy' (MA, University of South Africa, 1997), pp. 47, 49.
- 37 Law 16 of 1867: *Natal Government Gazette* 19(1083) 9 October 1867.
- 38 Leadbeater, 'Experiencing smallpox in eighteenth century England'; Razzell, *Essays in English Population History*.
- 39 Magistrates' reports varied greatly in thoroughness and detail. According to a report in the *Natal Witness*, 15 May 1863, two colonists in Ladysmith had contracted smallpox but had survived. The same report remarked on the great willingness of Africans to be vaccinated.
- 40 New Zealand's Central Vaccination Board was established in 1854. By 1859 it was estimated that two thirds of the Maori population had been vaccinated (Day, 'Chastising its people with scorpions', pp. 182–183).
- 41 D.B. de Lancey, 'Piercing the veil: reading the African-American experience of smallpox vaccination in Philadelphia, 1823–1923 (Ph.D., University of Manchester, 2006), pp. 67–68.
- 42 Van Heyningen, 'Public health and society', p. 124; Penn, 'The Northern Cape frontier zone, 1700–1815,' p. 90.
- 43 Van Heyningen, 'Public health and society', pp. 126–127.
- 44 Offenburger, 'Smallpox and epidemic threat in nineteenth century Xhosaland', pp. 170–176.
- 45 Anne Digby, 'Medicine, race and general good: the career of Thomas N.G. te Water 1857–1926, South African doctor and medical politician' *Medical History* 51(1) 2007, p. 55.
- 46 Van Heyningen, 'Public health and society', pp. 130–131, 134–135.
- 47 PAR, CSO 646, No. 2149, 18 June 1878.



- 48 More than half the labour force of 4 400 was from Mozambique (Hein Heydenrych, 'Railway development in Natal to 1895', in *Enterprise and Exploitation in a Victorian Colony: Aspects of the Economic and Social History of Colonial Natal* edited by Bill Guest and John M. Sellers (Pietermaritzburg: University of Natal Press, 1985), p. 56.
- 49 Y.S. Meer, *Documents of Indentured Labour, Natal 1851–1917* (Durban: Institute for Black Research, 1980), p. 309.
- 50 Robert A. Huttenback, *Gandhi in South Africa: British Imperialism and the Indian Question, 1860–1914* (Ithaca: Cornell University Press, 1971), p. 3.
- 51 Letter, *Natal Mercury*, 17 August 1871.
- 52 *Debates of the Legislative Council* 3, p. 68. In 1881 it was reported that in recent years 60 000 Africans had been vaccinated (*ibid.*, p. 69).
- 53 *ibid.*; *Times of Natal*, 25 July 1882.
- 54 *Natal Government Gazette* 34(1961) 29 August 1882.
- 55 Editorial, *Natal Witness*, 2 September 1882.
- 56 *Blue Book for the Colony of Natal*, 1883, p. GG55.
- 57 *ibid.*, pp. GG 23, GG59, J2–3; Viljoen, 'The smallpox war', pp. 5–18.
- 58 *Blue Book for the Colony of Natal*, 1884, pp. B2–59.
- 59 PAR, Secretary for Native Affairs (SNA), 1/1/75, No. 567, 13 August 1884.
- 60 PAR, CSO 977, No. 3422, 31 August 1884.
- 61 *Debates of the Legislative Council* 7 (1884), p. 63.
- 62 *Natal Government Gazette* 36(2073) 19 August 1884.
- 63 Viljoen, 'The smallpox war', pp. 5–18.
- 64 *ibid.*, pp. 6–7.
- 65 *ibid.*, pp. 9–10, 12, 14–15.
- 66 Porter, 'The politics of prevention', pp. 235–236. Critics like Michael Fitzpatrick have had a field day in dismantling such views, particularly as put forward in Nadja Durbach's book *The Anti-Vaccination Movement in England 1853–1907*. Highly subjective and dismissive of statistics because she regarded them as 'problematic', Fitzpatrick asserted that Durbach failed to provide any basic facts about the epidemiology of smallpox. He also noted that anti-vaccination adherents were silent about the declining mortality rate by the 1890s as a result of vaccination and the public's demand for it. He dismissed the anti-vaccination movement as 'a libertarian impulse' with 'carnavalesque' tendencies which faded from view in the wake of improved awareness of public health (Michael Fitzpatrick, review of *The Anti-Vaccination Movement in England 1853–1907* by Nadja Durbach *Journal of the Royal Society of Medicine* August 2005, pp. 384–385; Joseph R. Fitchett and David L. Heymann, 'Smallpox vaccination and opposition by anti-vaccination societies in nineteenth century Britain' *Historia Medicinæ* 2(1) January 2011, p. 10.
- 67 Day, 'Chastising its people with scorpions', p. 184.
- 68 Martin Kaufman, 'The American anti-vaccinationists and their arguments' *Bulletin of the History of Medicine* September–October 1967, pp. 464, 466, 473–474.
- 69 *Votes and Proceedings* 36, pp. 259, 303, 371. Archdeacon Colley and 150 Pietermaritzburg inhabitants; E. Pickering and 669 others of Durban County; E. Taplin and 27 others of Durban.
- 70 *Debates of the Legislative Council* 8 (1885), p. 239.
- 71 Colony of Natal, *Statistical Year Book* 1907, p. 3.
- 72 Legislative Council Sessional Paper No. 27 (1885), p. 271. The African population of Natal was given as 377 581 in 1885 (Colony of Natal, *Statistical Year Book* 1907, p. 3).
- 73 *Debates of the Legislative Council* 8 (1885), pp. 288, 365, 370.
- 74 *Blue Book for the Colony of Natal*, 1893–1894, department reports, pp. B4, B30, B62, B75; PAR, CSO 1378, No. 4893, 24 October 1893, District Surgeon Umlazi.
- 75 *Supplement to the Blue Book for the Colony of Natal*, 1889, p. A63.
- 76 PAR, Indian Immigration (II), 1/69, No. 619, 2 May 1893; II 1/71, No. 1235, 23 September 1893.
- 77 *Blue Book for the Colony of Natal*, departmental reports, 1893–1894, p. B4. The Indian population of Durban borough in 1893 was given as 5 917 ('Durban mayor's minute' *Natal Mercury*, 11 August 1893). The Indian population of Natal in 1894 was given as 42 967 (Colony of Natal, *Statistical Year Book* 1907, p. 3).
- 78 PAR, Indian Immigration, II 1/68, 402/93, 28 March 1893. It would be a matter of conjecture to speculate about the reasons why some Indian parents did not bring their children forward to be vaccinated. Desai and Vahed in their detailed study, *Inside Indian Indenture* (2010), make no reference to that subject.
- 79 Robinson, *A Lifetime in South Africa*, p. 319.
- 80 PAR, CSO 1358, No. 1010, 2 June 1893. A synopsis of vaccinations done in 1892 indicated that substantial numbers had been performed.

- 81 PAR, CSO 1366, No. 2506, 1 June 1893.
- 82 *Natal Witness*, 28 June 1893.
- 83 PAR, CSO 1375, No. 4278, 15 September 1893. *Kholwa* were Africans who had to some extent abandoned traditional law and practice and adopted aspects of Western, Christian lifestyles (Lambert, *Betrayed Trust*, p. 49).
- 84 PAR, CSO 1376, No. 4405, 24 September 1893.
- 85 *Natal Witness*, 29 November 1893.
- 86 PAR, CSO 1375, No. 4251, 14 September 1893.
- 87 PAR, CSO 1377, No. 4601, 5 October 1893. Weenen County reported a 10% death rate (*Blue Book for the Colony of Natal*, 1893–1894, p. B5).
- 88 *Blue Book for the Colony of Natal*, 1893–1894, pp. B7, B35, B37, B34, B65.
- 89 *Natal Witness*, 11 November 1893.
- 90 PAR, CSO 1377, No. 4601, 12 October 1893.
- 91 PAR, CSO 1354, No. 225, 12 January 1893: The Treasury was asked for an additional £400 for vaccinations. A request for a further £400 was made on 24 February 1893 (CSO 1357, No. 967).
- 92 PAR, CSO 1375, No. 4245, 13 September 1893.
- 93 PAR, CSO 1379, No. 5104, 6 November 1893.
- 94 PAR, CSO 1377, No. 4601, 12 October 1893.
- 95 PAR, CSO 1375, No. 4245, 13 September 1893.
- 96 *Natal Witness*, 14 November 1893, pp. 4, 6.
- 97 PAR, CSO 1387, No. 476, 3 February 1894; CSO 1394, No. 2024, 24 April 1894.
- 98 PAR, CSO 1393, No. 1918, 14 April 1894.
- 99 *Votes and Proceedings* 50 (1894), p. 3. Africans were far more exposed to smallpox than whites for two reasons. First, they came in direct contact with infected migrant labourers; second, the close proximity of huts constituting a homestead and the relative crowding within each hut greatly facilitated transmission of the virus.
- 100 Hattersley, *Hospital Century*, p. 60. Like smallpox in Natal, outbreaks of yellow fever in Senegal were recurrent. But the responses of the respective communities were different. The high mortality rate – 5 000 deaths in November 1868 in Senegal – caused panic and flight when the disease struck. Mortality rates in Natal were slight in comparison (Kalala Ngalamulume, ‘Keeping the city totally clean: yellow fever and the politics of prevention in colonial Saint-Louis-du-Senegal, 1850–1914’ *Journal of African History* 45 (2004), pp. 185, 190).
- 101 PAR, CSO 1613, No. 3681, 12 May 1899.
- 102 *The Times* (London), 27 April 1891.
- 103 *Natal Mercury*, 1 December 1896.
- 104 Ruth Edgcombe and Bill Guest, ‘An introduction to the pre-Union Natal coal industry’ in *Enterprise and Exploitation in a Victorian Colony: Aspects of the Economic and Social History of Colonial Natal* edited by Bill Guest and John M. Sellers (Pietermaritzburg: University of Natal Press, 1985), p. 316.
- 105 £13 256 was spent up until 1 September 1893. Two additional sums of £500 each were requested in September and November 1893 on top of the £2 000 vote allocation. In April 1894 an additional £1 250 was granted to the authorised £1 500 (PAR, CSO 1375, No. 4245; CSO 1379, No. 5104; CSO 1393, No. 1918).
- 106 Customs charges brought in £141 401 and railways (NGR) £178 287 (*Blue Book for the Colony of Natal*, 1886, p. R2).
- 107 *Debates of the Legislative Assembly* 28 (1899), p. 15.
- 108 *Blue Book for the Colony of Natal*, 1897, p. H162.
- 109 Representative of the paltry investment made in the welfare of Africans were the cottage hospitals established by the colonial government. Scattered around Natal, there were fifteen in all. A cottage comprised two or three separate rooms and had a capacity of twelve beds. In some instances, such as at Umzinto, a cottage hospital was for Indians only (Ngubane, ‘Divided facilities’, pp. 3, 12, 14, 61).
- 110 Report of the Protector of Indian Immigrants, 1890 in *Supplement to the Blue Book for the Colony of Natal*, 1890–1891, p. A62.
- 111 Digby, *Diversity and Division in Medicine*, p. 171.
- 112 Maynard W. Swanson, ‘“The Asiatic Menace”: creating segregation in Durban 1870–1900’ *International Journal of African Historical Studies* 16(3) 1983, p. 413.
- 113 Duncan L. du Bois, *Labourer or Settler? Colonial Natal’s Indian Dilemma 1860–1897* (Durban: Just Done Productions, 2011).
- 114 Suzanne Parry, ‘Tropical medicine and colonial identity in northern Australia’ in *Medicine and Colonial Identity* edited by Mary P. Sutphen and Bridie Andrews, pp. 108–110, 114.
- 115 There were six major smallpox epidemics in Ethiopia during the nineteenth century (Gerald W. Hartwig, ‘Smallpox in the Sudan’



- International Journal of African Historical Studies* 14 (1981), p. 10; Roger Botte, 'Rwanda-Burundi: 1889–1930: chronology of a slow assassination, part 1' *International Journal of African Historical Studies* 18(1) 1985, p. 55. As noted earlier, smallpox also had a very negative effect on the Aboriginal population of Northern Territory, Australia.
- 116 Maureen Malowany, 'Unfinished agendas: writing the history of medicine of sub-Saharan Africa' *African Affairs* 99 (2000), p. 328. Botte in his study of colonial Rwanda-Burundi states at the outset that source material is limited to oral tradition, missionary diaries and some German and Belgian unpublished records (Botte, 'Rwanda-Burundi', p. 53).
- 117 Malowany, 'Unfinished agendas', p. 329.
- 118 Gerald H. Rée, 'Policing public health in Queensland, 1859–1919' (D.Phil., Griffith University, Queensland, 2010), pp. 278–279. In 1853 Tasmania was the first of the Australian colonies to legislate compulsory vaccination. Victoria followed in 1874 (Rebekah McWhirter, 'University of Tasmania', 2008, <https://eprints.utas.edu.au/8077/2/02>, pp. 2–3).
- 119 Alan Mayne, "'The dreadful scourge': responses to smallpox in Sydney and Melbourne, 1881–2' in *Disease, Medicine and Empire* edited by Roy Macleod and Milton J. Lewis, pp. 224, 235.
- 120 McWhirter, 'University of Tasmania' <https://eprints.utas.edu.au/8077/2/02>, p. 19.
- 121 Van Heyningen, 'Public health and society', p. 131.