

Of rats, fleas, and peoples: towards a history of bubonic plague in southern Africa, 1890-1950

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In the 14th century, plague, then known as Black Death, killed some 25 million people—a quarter of the population in Europe. The great plague of London in 1664-65 resulted in more than 70,000 deaths in a population estimated at 460,000. And in 1894 an outbreak in Canton and Hong Kong killed 100,000 spreading over the next 20 years from the southern Chinese parts throughout the world and resulting in more than 10 million deaths.¹

Source: *Electronic Mail and the Guardian* February 25, 1997

Bubonic plague first reached Southern Africa through the seaports of Cape Town, Port Elizabeth, East London, and Durban in 1900 at the height of the Anglo-Boer war of 1899-1902. The dread disease found Southern Africa's ports, harbours and railway stations bursting at the seams with wartime commerce, and with an influx of refugees from the interior and large numbers of migrant labourers.²

From the ports, the plague spread to towns close to railway stations and finally into the interior where it caused havoc for the political economy of rural Southern Africa. Bubonic plague normally spreads as a disease among rodent populations living in the vicinity of human habitation. Fleas from dead rats if unable to find another rodent host begin to infest people instead.³ Bubonic plague became endemic in Southern Africa, and natural reservoirs of the malady still exist in the region. This paper examines the responses of colonial governments to outbreaks of bubonic plague in the interior, particularly that of the Bechuanaland Protectorate (Botswana) administration.

Bubonic plague had long existed in Argentina, Australia, China, and India, but seems to have been unknown to Africa until the British brought the disease into Southern Africa at the turn of the twentieth century. The spread of bubonic plague followed altered patterns of intercontinental communication that Philip Curtin identifies in his seminal article 'Epidemiology and the Slave Trade':

in the long sweep of history...increased intercommunication has made disease environments nearly alike, not more diverse, but each break of previous isolation has brought higher death rates as unfamiliar disease attack populations whose environments provided no source of immunity.⁴

Maynard Swanson agrees that bubonic plague spread from other countries to South Africa as a result of greater human mobility at the beginning of the twentieth century. According to Swanson, 'forage imported for the British army from Argentina, India, or Australia carried the plague bacillus in the rats and fleas that accompanied it.' By December 1900, 'rats were seen dying in great numbers at the docks but military officers in charge did not report this to the public health authorities.'⁵ Understandably, military officials were preoccupied with the defeat of the Boers and the restoration of Britain's prestige in the eyes of the international community.

Colonial authorities both inside and outside the Cape Colony were caught unawares by the deadly disease. The first cases of bubonic plague appeared early in February 1901 in Cape Town among coloured and African dock workers. The mayor of the Cape Town was, among the first authorities to comment, lamenting that: 'the dreaded bubonic plague—the scourge of India had at last made its appearance in our midst.' In South Africa, as in India,

there was a perception among Europeans that the native population, living as it did in unsanitary surroundings, would be a source of secondary infection.

Consequently, residential segregation was seen as the best way of protecting British troops and the white community from the dreadful disease that had come to Cape Town. Spatial segregation however failed to prevent all social intercourse between military personnel and the communities of the African and coloured 'locations'. Not unexpectedly in a theatre of war, soldiers sought the comfort of home in there.⁸

Meanwhile trains leaving Cape Town transmitted bubonic plague as far afield as Bechuanaland Protectorate, Southern Rhodesia (Zimbabwe) and North-Western Rhodesia (western Zambia), as other railway stations within the colonies of South Africa. By April 1901 there was a confirmed case of plague at Mafeking, the formerly besieged (1899-1900) administrative headquarters of the Protectorate just south of its border. This was enough to cause quite a scare inside the Bechuanaland Protectorate. From Palapye, 1130 miles from Cape Town on the railway, the Assistant Commissioner for the northern Protectorate appreciated the magnitude of the problem. Alerting his colleagues at Mafeking, he warned:

The introduction of the plague into a large and scattered native population such as this would be an extremely serious matter and possibility of eradication is doubtful⁹...

Local people feared a disease about which they had heard and knew very little. At Kanye in the southern Protectorate, Kgosi Bathoen I of the Bangwaketse assumed that there was a cure for bubonic. Early in May 1901 he appealed to the Acting Resident Commissioner at Gaborone, Vivien Ellenberger, to rescue his people from impending danger. As 'this plague is spreading fast', he wrote:

Will you please do your best to get me the best medicine (sic) for the same so that I can commence to prepare it for my people as it (the plague) is reported at Mafeking.¹⁰

Kgosi Bathoen's fears were allayed by the Protectorate administration, which told him that the person reported to be suffering from plague in Mafeking had recovered, and that the epidemic was at that time confined to the Cape Town vicinity and Port Elizabeth.¹¹ Bathoen was assured that routine examinations by medical men were being conducted on the travelling public, and that quarantine measures were in force before people could be allowed to enter his reserve from those parts of South Africa. While quarantines often helped to control the spread of diseases, sometimes they encouraged concealment of cases.¹²

Archival sources show that, while the Anglo-Boer war raged, the onus of initiating anti-plague measures fell on the Bechuanaland Protectorate's fledgling colonial administration. Frontier precautions against the epidemic, drawn up by Protectorate authorities, were applied by Cape Colony and Southern Rhodesian health officials and administrators. Convinced that it would be impossible to eradicate the scourge of plague in a country with 'a large but scattered African population', the Protectorate administration made recommendations primarily with the protection of the health of Europeans. Measures to try and control of the epidemic were considered secondary. These were necessary only in so far as they prevented disruption to the regional economy in terms of rail transportation and the facilitation of labour migration. Confronted by epizootics, notably rinderpest in the 1890's and bubonic plague in the 1900's, the holders of state power in Southern Africa opted for short-term political expediency.

The Acting Assistant Commissioner at Palapye recommended that routine medical examinations of passenger trains should be undertaken at Mahalapye, which was 1087 miles

(four and a half days) from Cape Town, 45 miles from Palapye, and 273 miles (twenty-one hours) from Bulawayo.¹³ He suggested that a medical officer be stationed there to provide isolation camps for actual cases of bubonic. A European medical officer would deal with whites, while natives would be attended to by African health workers.¹⁴ The governments of Southern Rhodesia and Bechuanaland Protectorate should share on an equal basis the costs of the medical officer and the maintenance of the camps.¹⁵

The Acting Assistant Commissioner recommended strict enforcement of public health standards on coloured people travelling from Kimberley, or from any point south thereof. Irrespective of their state of health or their destination, coloureds (people of Khoe or mixed origins) were to be detained with their baggage at Mahalapye for a period of 12 days.¹⁶ Neither Mafekeng nor Cape Town raised any objection to this proposal. One can see the same stamp of racial intolerance that characterised the High Commissionership of Sir Alfred Milner and his medical doctors who initiated urban segregation in Cape Colony.¹⁷ Coloureds were seen as degraded folk sunk in environmental surroundings conducive to the generation and spread of epidemic diseases.¹⁸

By contrast with Palapye and Cape Town, heads were cooler in Salisbury and Bulawayo. Correspondence between officials there reflects a more mature way of dealing with the problem of plague. The Resident Commissioner in Salisbury thought the proposal on indiscriminate detention of coloureds was 'too drastic'. In the meantime, he was satisfied with the proposal for 'thorough examination at Mahalapye'. He endorsed the detention of real cases of infection only—as well as the sharing of costs and camps at Mahalapye. Africans, especially those coming from districts south of De Aar junction in Cape Town, were to be particularly suspect. The Salisbury authorities advised that the work at Mahalapye be given to a medical officer with experience of plague in India.²¹

Goods and mail from Cape Colony had to be routinely disinfected before departure from Cape Town; their being considerable difficulty in disinfecting them at intermediate stations.²² Importation of forage grain, fruit and vegetables from infected areas Cape Colony were prohibited altogether. Undisinfected goods arriving at Mahalapye were either sent back at the expense of the railways or they were destroyed on the spot.²³

The next bubonic scare was a quarter of a century later. An outbreak of plague in the Transvaal in 1925-26 quickly spread to Lichtenburg, southeast of Mafeking. The Protectorate administration responded by appointing two rodent inspectors to patrol its southern and southeastern borders, to keep a watch on rodent mortality and report any suspected case of plague.²⁴ The Resident Commissioner and the Principal Medical Officer addressed Chiefs and headmen, the local authorities of the Protectorate, on the dangerous disease called bubonic plague. They were told that the disease been a cause of trouble and death in the Union of South Africa and was now threatening the country from Lichtenburg.²⁵

The official position in Botswana was summed up in the annual medical and sanitary report for 1925-26:

The presence of plague in the Union had to be kept in view, but as the outbreaks there were so well controlled, nothing special; watchfulness and the precautionary readiness proved to be necessary.

Watchfulness and precautionary readiness were now to be tested. In 1927-28, two cases of bubonic plague were reported at Good Hope in Botswana's Barolong farms.³⁰ Both cases were successfully treated and the necessary survey work undertaken in the area to ensure that the situation was under control.

The Union of South Africa's Secretary for Public Health, Alexander Mitchell, warned the High Commissioner's office at Cape Town in February 1928 that 'plague infection exists in

veld rodents along the entire boundary between Basutoland [Lesotho] and the Free State.' The good news however, was that the Caledon river border of Basutoland was a fairly effective barrier.

Bechuanaland's Principal Medical Officer to report further to the Chiefs and headmen on the spread of bubonic plague in South Africa. He told them that the plague was clinically characterised at the onset by painful swellings, especially in the groin, armpits and the neck. Mortality was approximately 75% among hospital admissions despite every medical aid. They all had cause to worry about the impending threat.²⁷

Dr. Mitchell offered the following information on the threat to the Protectorate:

Threat is to the south eastern corner of the B.P. The plague is 10 miles north of Vryburg and about 30 miles East of Kuruman joining the Vaal river at Mosesburg [near Schmidtsdrift]. The nearest point of infection is now 25 miles of the B.P. border.²⁸

By contrast, the anti-plague campaign in colonial Ashanti (Gold Coast, later Ghana) at that time was much more successful. A vigorous propaganda campaign was launched under the slogan "KILL RATS AND STOP PLAGUE", with equivalents in several African languages and displayed on prominent structures.³¹ Anti-plague measures were enforced by sanitation authorities who urged people to fill in rat-holes around their homes and to accept frequent disinfections of their houses and storage facilities. Moreover, unlike in Southern Africa, rat-trapping was a popular undertaking, probably because of the remuneration involved. We learn that in one particular area:

An average of 200 rat traps were set daily, the traps being the ones that caught the rats alive so that fleas would remain on them. Over 4,900 rats were captured in this way, out of an estimated rat population of some 25,000 to 3,000. Payment of 2d was offered for every rat brought to the authorities...³²

Southern Africa's history of deep-rooted racism, oppression and exploitation often had a negative effect on good public health programmes. Governmental concerns with the public health and the resultant increasing state intervention were seen as interference in the daily lives of ordinary people. As a result, local populations often adopted different forms of passive resistance towards some of the vigorous anti-plague measures. They did not, for example, appreciate the filling of rat-holes around their dwelling places and storages. Instead people preferred to keep cats so that they might kill rats. Equally unpopular were anti-plague measures requesting people not to eat hares, ground squirrels, spring-hares and meercats etc. when they found them dead in the veld.³³

Africans in Basutoland were encouraged to destroy veld rodents, but the campaign was not pushed too hard.³⁴ In Bechuanaland Protectorate, doubts were expressed if similar measures would really retard the advance of the plague in view of the size of the country. Where this was done at all, people were asked to destroy rats only 'in larger towns and villages'.³⁵ Even then, the message went unheeded unless and until the chiefs supported the administration in that respect. To an ordinary African the killing of rabbits and spring-hares made more sense than the setting of traps for rats. Thus, in Southern Africa, the desire for improved public health brought rulers and the ruled into contact and occasionally into conflict.³⁶

In 1935, ten cases of plague were reported at Dinokana village in the Zeerust district of the Transvaal, about twenty kilometres from the Protectorate's Lobatse border post. From Kanye, the Resident Magistrate advised Dikgosi (Chiefs), missionaries and traders in the Ngwaketse Reserve and European settler farmers the Lobatse Block to destroy all rats, mice and rabbits in the vicinity of the dwellings and threshing floors.³⁷ In spite of this vigilance,

plague hit the country within a month, prompting the Resident Magistrate to warn Kgosi Bathoen II:

As you are aware plague has made its appearance in the Lobatsi district [and] as it was indicated it would soon spread to the rest of the Bechuanaland Protectorate.³⁸

With only one qualified European sanitary inspector and four African pupil sanitary inspectors, the small division of Public Health found itself overstretched. Luckily, the administration did not have all its eggs in this basket, but had the assistance of African local authorities. They readily offered support in men and materials. In Gangwaketse the most hard-hit areas were Kanye, Moshupa and Macheng. Three men, one from each place, were trained to assist sanitary officials in anti-plague work. For its part, the Protectorate administration distributed twelve spray pumps in the African reserves to fumigate with cyanide gas all huts, granaries and other surrounding showing signs of rodents.³⁹ Meanwhile educational trips to schools were undertaken and *kgotla* meetings were assembled around the country to disseminate information about the disease.

With increasing regional communications, diseases moved faster than ever between and within countries during the 1930's. Plague appears to have been introduced in Northern Rhodesia (Zambia) in March 1937 by means of the railways, motor transport or labour migration. Fearing the further spread of infection, the Northern Rhodesia authorities closed the Kazungula ferry across the Zambezi almost immediately, cutting off the supply of labour from Barotseland in Northern Rhodesia through Bechuanaland Protectorate to the Rand mines in South Africa.⁴⁰ All mine repatriates and other African passengers travelling between Northern Rhodesia and Bechuanaland Protectorate were out into quarantine camps, usually for twelve days before being allowed to proceed. Not surprisingly in view of racial discrimination, Europeans travelling by train were not so quarantined, but were only subjected to medical examination—and even then only at their respective destinations. Trains and vehicles were disinfected at the Victoria Falls, while aeroplanes touching down at Salisbury airport were inspected thoroughly and passengers examined on the spot.⁴¹ With extensive experience of disease control in West Africa, Sir Walter B. Johnson found the anti-plague measures then in use too loosely applied. He advised the Bechuanaland Protectorate administration as follows:

It appears that rodent plague is well established in the Protectorate [and] now anti-plague measures should be actively enforced. I therefore support the appointment of a second Sanitary Inspector whose [duty] will be anti-plague work.⁴²

Before the administration could act on the sound advice of Johnson, the Second World War broke out, depleting the already skeletal staff of the medical and sanitary department. Worse still, in October 1944 a major outbreak of plague devastated Ngamiland, Makalamabedi and Rakops. Bechuanaland Protectorate now had another war to fight within its own backyard. Almost four hundred cases of the disease were reported, with 188 deaths⁴³—nearly fifty percent of the known victims of the scourge. From Pretoria the High Commissioner told the Secretary of State for the Dominions in London to expect the worst:

high mortality from the disease must be expected with the possibility of spread to other areas⁴⁴ ...given the severity of the outbreak Sir Walter B. Johnson also feared the danger of infection being carried to neighbouring territories.⁴⁵

Once again, Johnson called for urgent measures to be taken before the infection swept through Southern Africa. The Protectorate administration responded by empowering district

commissioners through Regulation 8 of Public Regulations (published under the High Commissioner's notice of No. 116 of 1938) ordering compulsory protective inoculation where necessary. To it was added notice No 184 of 1944 enabling compulsory protective inoculation of people in affected areas.⁴⁶ All European families living in these areas were advised to leave, while the movement of all Africans was restricted and the recruitment of mine labour put on hold. With or without their consent, people were given injections with anti-plague serum as well as oral administration of sulphathiazole (M&B 720).⁴⁷ With assistance from the staff of the departments of public health in South Africa and Southern Rhodesia, the disease was at last brought under control, but not without a certain amount of opposition.

When people in the Rakops area began to obstruct anti-plague measures, the medical authorities sought assistance from Kgosi Tshekedi at Serowe. By January 1945 the medical officer-in-charge of plague was happily writing:

The impasse created at Rakops by the refusal of the populace to allow anti-rodent and deverminisation measures to continue, has now been successfully overcome by the presence there of Chief Tshekedi's personal representative who has...dealt effectively with the few instigator of the opposition.⁴⁸

In the 1940's the Witwatersrand Native Labour Association (WNLA) opened up road networks to facilitate the flow of labour in South Africa's far-flung labour empire, which had significant effects on both the spread and control of disease. From its depot in Francistown, WNLA trucking routes led north to receive Northern Rhodesian labour at Kazungula on the Zambezi river, west from Maun to Ghanzi and Grootfontein in South West Africa, and north from Maun to receive Angolan and Caprivi Strip labour at Mohembo on the Okavango river.⁴⁹ So long as plague was kept under control, thousands of recruits travelled by truck on these roads to Francistown and from there took the train to the Rand mines. In 1946, for example, 9000 Angolan recruits passed through Mohembo.⁵⁰

Following increased rodent activity in villages near the Okavango swamps in May 1945, Tsau, Gobonjango and Nokaneng experienced a mild outbreak of plague. Officials thought that the outbreak was a carryover from the previous year's epizootic and that it was not likely to spread to Namibia.⁵² The Protectorate administration was in a better position to deal with this particular outbreak, having secured the services of Major A. Altman of the Medical Research Institute in the Union of South Africa, to help control the scourge. This was 'Of greatest value at a time when staff shortage was most acute.'

During the outbreak of bubonic plague in October 1945, mine labour repatriates were quarantined for up to 12 days at Mohembo before being allowed to proceed to their homes in neighbouring Angola and South-West Africa.⁵¹ P. R. Booth of WNLA found himself helping to inoculate men, women and children in the plague-prone Chobe district.

Plague hit the Kgalagadi district in the south-western Protectorate in October 1949, eleven years after the disease had, according to Sir Walter B. Johnson, become well established in the Protectorate. Twenty-four cases of infection and twenty deaths were reported. Of the twenty deaths, three occurred at Bokspits a coloured settlement on the Molopo river.⁵⁷ The Kgalagadi district was well known for its high donkey, camel and horse populations. Horse stables in the vicinity of residential areas were said to provide particularly favourable conditions to rat breeding.⁵⁸

Surveys in the Kgalagadi and Maun districts revealed widespread rodent mortality. An extensive vaccination campaign followed, and health officials in the Protectorate requested their counterparts in the Union of South Africa to vaccinate Batswana working and living

the Union. Fortunately for the Union, this particular outbreak did not cross to the south side of the Molopo river.

Gobabis in South-West Africa was however hit by plague in July 1950. Clearly the infection had come from outside, though whether from the Okavango region or the recent outbreak at Bokspits was not known⁵⁴ But suspicion had to fall on WNLA, which had continued to recruit and return labour from and to South West Africa through Bechuanaland Protectorate for the Rand mines. Cuzen, WNLA's district manager for the northern Protectorate, boasted about WNLA's extensive transport system:

Associated with its activities the association runs a transport system which is now averaging 500,000 miles per without a fatal accidents...under normal circumstances the transport system carries annually 8,000 face-paying passengers in Bechuanaland and convoys about half a million lbs of merchandise for the Government, traders, and Africans.⁵⁵

WNLA roads extended across the Kalahari desert where only sand-tracks had existed before. But transport along these roads hastened the spread of infection in merchandise that was susceptible to rat breeding.⁵⁶

Conclusion

Increased intercontinental communications and population movement at the height of the Anglo-Boer war of 1899-1902 first brought bubonic plague into Southern Africa. Once introduced into the Cape Colony in 1901, the disease spread into neighbouring colonies through the movement of rat-infested goods by railroads, ox-wagons and motor vehicles. With a mortality rate up to 75% among its human victims, the disease first hit Botswana and Lesotho in 1927-28, and was then spread by the transport network of intensified labour migration into Zambia by 1937 and Namibia by 1950.

In Africa generally, and in Southern Africa in particular, colonial sanitation was first and foremost oriented towards the protection of the health of the European settler population. From around 1900, beginning in Cape Town, black residential areas for African and coloured people, who continued to be associated with poverty, disease and filth, were therefore physically separated from white residential areas.

Everywhere in rural Southern Africa, colonial governments administered by the cheapest means and avoided extensive and expensive public health programmes. In the Bechuanaland Protectorate, sanitation works were undertaken by sanitary officials only after the 1935 outbreak of plague. Then and only then, as the Protectorate's annual medical report at the time claimed, was 'Valuable work [...] done in connection with sanitation of school children and others in the precautions to be taken to combat malaria and fly borne diseases.'

Notes & References

- 1 See *Electronic Mail and Guardian*, 25 February, 1997.
- 2 See for example, Maynard N. Swanson, 'The Sanitation Syndrome: Bubonic Plague and Urban Native Policy in the Cape Colony', *Journal of African History*, 3 (1977), 387-410; L. Fourie, 'The Endemic Focus of Plague', *South African Medical Journal*, XXVII (1938), 353-357. S. Caldwell 'The Plague Outbreaks in King William's Town' (BA Hons. Research essay, University of South Africa 1987).
- 3 See *Electronic Mail and Guardian*, 25 February, 1997. Bubonic Plague is the mildest of the three clinical forms of the disease, the other two being pneumonic and septicemic plague.
- 4 Phillip D. Curtin, 'Epidemiology and the Slave Trade', *Political Science Quarterly*, LXXXIII. (June 1968), 195
- 5 Swanson, 'The Sanitation Syndrome'

- 6 *Ibid*
- 7 *Ibid*
- 8 A term borrowed Luise White. See her work *The Comforts of Home: Prostitution in Colonial Nairobi* (Chicago: University of Chicago Press, 1990). See also R.K.K. Molefi, *A Medical History of Botswana, 1885–1966* (Gaborone: Botswana Society, 1966), 8..
- 9 Botswana National Archives (hereafter NBA), RC 1/11, Assistant Commissioner, Palapye to Acting Resident Commissioner (RC), Mafeking 4 April 1901.
10. BNA, RC 1/11 Bathoen I to RC, 3 May 1901
11. *Ibid*, Acting Assistant Commissioner Palapye to RC, Mafeking 14 May 1901.
12. *Ibid*, Assistant Commissioner Palapye to RC Mafeking, 4 April 1901.
13. *Ibid*
14. *Ibid*
15. *Ibid*
16. *Ibid*
17. See for example D. Denoon, 'Temperate Medicine and Settler Capitalism: On the Reception of Western Medical Ideas' in R. McLeod & M. Lewis (eds.) *Disease, Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London & New York: Routledge, 1998), 121-138.
18. See for example Molefi *A Medical History* and also his 'The Whiteman's Liquor: a History', paper presented to Agricultural Research Seminar, Botswana College of Agriculture, Sebele, 10 May 1996 (Copy at BNA)
19. BNA, RC 1/11, Chief Secretary Salisbury to Secretary Bulawayo, n.d.
20. *Ibid*.
21. *Ibid*.
22. *Ibid*, Assistant Commissioner Palapye to Acting Resident Commissioner Mafeking, 4 April 1901.
23. *Ibid*.
24. Mushingeh eh, p.169
25. BNA, S.4/5: Address to Chiefs and Headmen by Principal Medical Officer, Mafeking, 14 April 1928.
26. *Ibid*.
27. *Ibid*., Mitchell to Imperial Secretary Cape Town, 24 February 1928.
28. *Ibid*.
29. *Ibid*., and High Commissioner to Resident Commissioner, 5, March 1928.
30. BNA, Annual Report 1927-8, 29.
31. See J.W. Brown, 'Increased Intercommunication and Epidemic Disease in early Colonial Ashanti', in G.W. Hartwig & K.D. Patterson (eds), *Disease in African History* (Durham, North Carolina: Duke University Press, 1978), 180-206.
32. *Ibid*.
33. BNA, S.4/5: Address to Chiefs and Headmen by Principal Medical Officer, Mafeking, 21 April 1928.
34. *Ibid*.
35. *Ibid*.
36. See for example, Hartwig et al, *Disease in African History*, 17; Molefi, 'The Whiteman's Liquor'
37. BNA. SDC. 20/2, RM. to Bathoen II, 3 April 1935.
38. *Ibid*, RM to Bathoen II, 3 May 1935.
- 39 A.C.S. Mushingeh, "A History of Disease and Medicine in Botswana, 1820–1945" (PhD Thesis University of Cambridge, 1984), 169-171.
40. See Molefi, *Medical History*
41. BNA, S.288/1/4, M. Gerber to Principal Medical Officer, 8 March 1937.
42. BNA, S.12/7/1, Sir Walter B. Johnson's report, 1938.
43. BNA, S.288/3, Minutes of the EAC., 24-28 December 1945, 45.
44. BNA, S.288/1/1, HC to SS., 27 October 1944.

45. *Ibid.*, GS to HC., 25 October 1944
46. *Ibid.*, AS to HC., 30 October 1944.
47. See Molefi, *Medical History* 134.
48. BNA, S.78/4/1, Minute by G.E. Nettelton, 18 February 1945.
49. J .J. Crush, M. Yudelman and A.A. Jeeves., *South Africa's Labour Empire: A History of Black Migrancy to the Gold Mines*, (San Francisco: Westview Press, 1991), 39.
50. See R.K.K. Molefi, *A Medical History*, 136.
51. BNA, S.288/1/3, Medical Officer 1/c of Plague, 9 January 1945, and BNA, S.288/2 G.M. WNLA to Principal Medical Officer, 28 February 1946
52. BNA, S.288/1/4, DDMS to Medical Officer to the Admin. Windhoek 27 December 1945.
53. BNA, S.288/1/3, DDMS to G.S., 16 March 1945
54. BNA, S.288/1/5, Acting DMS to GS, 26 September 1949; 11 October 1949.
55. BNA, S.344/10.1, District Manager, WNLA. Northern BP., Notes on WNLA, 21 July 1945.
56. P. Cuzen, *The History of Teba in Botswana*, Gaborone (BNA-BNB 10/313)
57. BNA, S.288/1/5, Acting DMS to GS, 26 September 1949; 16 October 1949.
58. See Brown, *Increased intercommunication*, 192
59. See Molefi, *Medical History*, 138 – 139.
60. *Ibid.*
61. BNA, Medical Services Report, 135.