Historia 55,2, November 2010, pp 243-262

"The story of a disease": African horsesickness and its direct influence on the necessary development of veterinary science in South Africa c. 1890s–1920s

Stefanie Vandenbergh*

Background

This article will position the African horsesickness[1] (AHS) disease within the context of the broader development of veterinary science in South Africa. It is important to understand the role of the horse, and specifically the effects of AHS, in order to comprehend the rapid development of veterinary science in South Africa during the period stretching from the 1890s to the 1920s.

Relative to Europe, veterinary science was underdeveloped in South Africa in this period. At present, rapid developments in veterinary science are influenced by major changes in societal attitudes but this was hardly the case with early veterinary medicine in South Africa. At the time, horses were the backbone of the country's economic development, therefore AHS, of which there were several serious outbreaks, had the potential to exercise a significant negative impact on the economic development of the country. Interest in the health of horses increased, especially finding a cure for AHS. The outbreaks clearly indicated the need for more profound and better-developed veterinary science.

This article will discuss the importance of animal disease, focusing on AHS in South Africa by illustrating the initial awareness of the disease; the strategies originally developed to combat it; the consequences of and the reactions to AHS; and the history of veterinary science in South Africa. In this way, the necessity for the restructuring and amalgamation of veterinary science in the country will become evident. Finding a cure for AHS was an economic necessity; the disease was the reason behind the rapid and necessary developments in veterinary science in South Africa during the period from the 1890s to the 1920s.

The role of the horse and African horsesickness in South Africa

Although AHS has attracted a great deal of attention, the topic has not been extensively researched from outside the perspective of the natural sciences. It has

* Stefanie Vandenbergh would like to thank Prof S. Swart for her contribution to this article. Stefanie received her Masters degree in History, with distinction, on a socio-environmental analysis of African horsesickness in historical perspective. She is currently working towards her doctorate at the University of Stellenbosch. Email: svandenbergh@sun.ac.za

1. African horsesickness (AHS) is classified as an Orbivirus of the Reoviridae family. It is a vector-born, non-contagious viral disease that affects all Equidae species, having a mortality rate of 70–90 per cent. The vector hosts are Culicoides midges spreading the nine serotypes of the AHS virus. Wild Equine species such as zebras are resistant to the disease. Symptoms include high fever; difficulty in breathing, with mouth open and head hanging down; frothy discharge from nose; swelling of head and eyes; colic symptoms; and the inability to swallow.

been mentioned when dealing with the effects of animal diseases, but a broad history of the social impact of the disease has not been adequately addressed.

AHS was already encountered in South Africa when the first horses were imported.[2] One of the earliest documents on animal diseases prevalent on the African continent was by Father Monclaro, a missionary who wrote travel stories. It was he who made the first reference to a disease that can be interpreted as AHS.[3] In his account of the journey of Franciso Baro in 1569 to East Africa, he mentioned that horses brought from India had died, and that their death was thought to be on account of poisoning by the natives. He tells of a stallion that was led to the water but fell and cast up "yellow matter". Arnold Theiler[4] recorded that this yellow matter must have been the path gnomonic symptom of AHS, and in his view the experiences of the early Portuguese pioneers can be regarded as the first records of AHS in the Zambezi estuary.

The disease captured the imagination of early commentators. One described it as a scourge akin to the biblical plague suffered by the Egyptians for their detention of the Israelites.[5] Certainly, during the Egyptian war of 1882, the horses imported from England, Syria and other eastern countries were greatly affected by AHS. Because they were imported they were weaker and unaccustomed to the environment and unlike the local horses they had no resistance to the disease. Veterinarians realised more than ten years later, that it was not as widespread as originally thought, but claimed that it was a disease peculiar to South Africa.[6] Erring on the side of geographical insularity, they called it South African horsesickness.[7]

At first, breeders were not really interested in the avoidance or prevention of the illness because the disease was endemic, affecting only a limited number of horses. It was only after the 1854–55 outbreak (the official number of mortalities came close to 65,000, which at the time was a staggering 40 per cent of the entire horse population of the Cape of Good Hope[8]) that the huge losses caused alarm. According to the *Graaff Reinet Herald*, "The horse sickness of 1854–55 devastated the Cape Colony to such an extent that everyone felt interested in the discovery of its

2. For more on the impact of horses on South African history, see S. Swart: "High Horses: Horses, Class and Socio-economic Change in South Africa", *Journal of Southern African Studies*, 34, 1, 2008; and '"Horses! Give me More Horses!': White Settler Society and the Role of Horses in the Making of Early Modern South Africa", *in* K. Raber and T.J. Tucker, (eds), *The Culture of the Horse: Status, Discipline, and Identity in the Early Modern World* (Palgrave Macmillan, New York, 2005).
3. A. Theiler, "African Horse Sickness (Pestis Equorum)", *Department of Agriculture, Science Bulletin*, 19, 1921, p 1.
4. Arnold Theiler, a Swiss veterinarian who immigrated to South Africa in 1891, became the first state veterinarian. He wrote one of his major published articles about AHS in 1921. "African Horse Sickness (Pestis Equorum)" is still regarded today as one of the first, most complete and comprehensive pieces written about the disease.
5. C. Rutherford, "Horse Sickness of South Africa", Reprinted from *Cape Times,* August 1885, p 1.
6. A. Edington, "South African Horse Sickness: Its Pathology and Methods of Protective Inoculation", *Proceedings of the Royal Society of London,* 67, 1900, p 292.
7. Cape Archives (hereafter KAB), Government, Colonial and Conference Reports (hereafter GCCR), H. Watkins-Pitchford, *Colony of Natal: Horse Sickness Investigation, Introductory,* 1903, p 2.
8. "African Horsesickness (Perdesiekte)", available at www.nda.agric.za (accessed 23 March 2008).

cause, with a view to its prevention and cure."[9] Horse breeders did their best to curb falling horse stocks. The Cape of Good Hope Agricultural Society issued an application to ascertain "the nature of the complaint, its stimulating cause, most successful treatment, and the possibility of arresting its progress, or mitigating its ravages on any future occasion".[10] Unfortunately, interest was still relatively low because many farmers and horse owners underestimated the seriousness of the disease and at that time, the country was expanding and developing, causing other problems that were of greater importance and required immediate attention.

Not only was the interest in the disease quite low, but scientists, researchers and farmers (including horse owners and breeders) did not see eye to eye on AHS. Duncan Hutcheon[11] described every single case in an extensive report,[12] but his views were not always shared by researchers and horse owners. T.B. Bayley, an Anglo-Indian who moved to South Africa and became a well-known horse breeder and author of *Notes on the Horse Sickness at the Cape of Good Hope, in 1854–'55,* and another farmer, Way, observed that once a horse recovered from the AHS, it was not subject to a second attack. This was subsequently proved incorrect in an experiment when salted horses[13] from the Cape were sent to Mashonaland, and died of AHS.[14] Since the scientists were unaware of the different strains of AHS, they explained the death of these horses as being on account of the "Mashonaland disease". Alexander Edington[15] subsequently proved in his experiments that "true immunity in horses against this disease is never acquired".[16] It is known today that different strains of AHS exist and although a horse may recover from a particular strain, it is not safeguarded from others. Although early researchers and farmers had limited knowledge of the disease they were correct in their observation that once a horse had become infected and recovered it would not fall ill again as easily. This would only be true, however, if the horse was infected with the same strain of AHS. Way stated:

> I have alluded to a curious fact in the history of the complaint, namely, that horses which have had the disease and recovered, are, as a general rule not subject to it a second time. In the colony, where horses are plentiful, and the disease occasional, this fact is, I believe, little known, and still less appreciated; but among the boers over the Vaal it becomes an essential consideration in the purchase of a horse. Is he "gesout"

9. *The Graaff Reinet Herald*, 11 October 1856.
10. KAB, GCCR, T.B. Bayley, *Notes on the Horse Sickness at the Cape of Good Hope, in 1854–'55, Complied from Official Documents*, 1856, p 5.
11. The need for veterinarians in South Africa became apparent by the end of the nineteenth century; people realised that one expert on animal diseases was not enough in a country that was dependent on livestock. When Europe was rapidly expanding in veterinarian medicine, South Africa appointed its second veterinarian surgeon, Duncan Hutcheon, a Scot who graduated from the Royal Veterinary College in Edinburgh in 1869. He was appointed as colonial veterinary surgeon in 1871.
12. KAB, GCCR [A73-'81], D. Hutcheon, *Report of the Colonial Veterinary Surgeon on Horse Sickness,* 1881.
13. Salted horses are horses that were previously infected and survived; they are therefore less susceptible to the disease.
14. KAB, GCCR [G73-'96], F. May, *Reports in Regard to Horses sent to Mashonaland, after Experimental Treatment against Horse Sickness at the Colonial Bacteriological Institute, Graham's Town,* 1896, p 7.
15. Alexander Edington was the bacteriologist of the Cape Colony and later became the director of the Bacteriological Institute.
16. Edington, "South African Horse Sickness", p 305.

> [salted]; has he had the disease? [This] is the first question; the value of the animal being increased double or treble his natural value by the circumstance.[17]

Thus if a horse was fortunate enough to outlive an AHS epidemic during that time, its value increased, and if it recovered from the disease during an epidemic, its value would rise even higher.

Taking a closer look at the history of the development of veterinary services in South Africa, it becomes clear that the characteristics of AHS were not fully known. Horse owners and farmers who encountered the disease in the early years of white settlement of the African continent did not make any notes about the sickness, nor did they keep track of the symptoms of AHS. Researchers and scientists were virtually non-existent and the first colonial veterinarian was only appointed in 1876.[18] Even the causes of babesiosis, anthrax[19] and blackquarter were unknown, and were regarded as the same disease that manifested itself in different forms. Today, it is common knowledge that AHS is an endemic[20] non-contagious viral disease that can affect all Equidae species.

Initial awareness of and reactions to African horsesickness

During the nineteenth century, many causes of infection were proposed, investigated and disseminated. Green food was thought to cause AHS as was the early morning dew on the grass.[21] Some thought the grass itself contained poison[22] or that there were germs on the ground.[23] There was a general belief that the bitter-tasting dew, having a brown colour, poisoned the blood of the horses. They therefore believed that the sun had to warm the air thoroughly, dispelling the dew of the night. As soon as the dew was dried, horses were allowed to go outside and graze.[24] Hutcheon strongly believed that heavy dew was always present at night during AHS outbreaks.[25] Bayley refused to agree that dew was the culprit because he had never encountered brown dew, except for the "mountain dew" of Scotland.

Blaming the presence of dew for AHS was not too far-fetched, because during some outbreaks, dew was indeed prevalent. The weather was calm with a clear sky at

17. T. Maclear, "Horse Sickness in South Africa", *Cape Monthly Magazine,* 1, February 1857, p. 70.
18. D. Gilfoyle, "Veterinary Science and Public Policy at the Cape Colony, 1877–1910." PhD thesis, University of Oxford, 2002, p 43.
19. Babesiosis, or piroplasmosis, is a collective term used for animal diseases caused by Protozoa; cattle, horses, dogs, sheep, goats and pigs are affected. Anthrax or splenic fever is caused by the Bacillus anthracis. It is a very acute disease for ruminants. Local splenic fever occurs in pigs, horses, dogs and cats, affecting their throat and intestines.
20. Endemism is the continuous presence of a disease within a certain geographical region and affecting a certain group of people or species. It is not a sudden outbreak of disease, but a situation that exists for years with a constant number of infections. A sudden outbreak of disease on a bigger scale and with a higher number of infections is called an epidemic.
21. *Commercial Advertiser,* 20 July 1856.
22. KAB, GCCR, S. Wiltshire, *Government Notice 192*, 1878, p 2.
23. KAB, GCCR, J. Lambert, *Government Notice 448*, 1881, p 3.
24. *Commercial Advertiser,* 24 July 1856.
25. KAB, GCCR, D. Hutcheon, *Horse Sickness,* 1892, p 6.

night followed by a hot day[26] and the casualties of the disease were more often that not the horses that were kept outside for the entire day and night. Researchers became aware of the fact that their understanding of AHS needed to improve if they were to search for preventative methods or even a cure, so they gradually began to search for less obvious factors that might have prompted the AHS outbreaks. Hutcheon noticed, for example, that the disease rarely occurred on high mountains, and he ascribed this to the fact that hardly any dew settled on mountains. He thus warned against leaving horses overnight in deep ravines or in low-lying valleys.[27] Horses roaming on the hills during AHS outbreaks appeared to remain free of infection, whereas those that went down into the valleys became susceptible. Hutcheon also believed that the dewy atmosphere in the early mornings (before being evaporated by the sun) was a possible infector, because he claimed that horses contracted the disease not only via their mouths, but also through their nostrils during breathing.

Herbs and cobwebs were also treated with suspicion. Hart of Somerset stated that "the cause of the horsesickness is occasioned by a very minute insect of the spider tribe, either the insect itself, or web, or both, and is dependent on the atmosphere".[28] Nor was Hart alone in this belief. Hartman of Victoria and C. Penny agreed with his theory. Hartman noted that "when the horse sickness broke out in January last, there had been for some time before much rain, heavy fogs, clammy dews, and the grass and trees were covered with filaments resembling cobwebs".[29]

C. Penny, furthermore, stated that he was led to observe "an extensive and sudden rise of a great quantity of cobwebs from the grass and bushes". Foss and White of Swellendam thought that the disease was contagious under certain circumstances as well as epidemic. Foss observed: "The disease appears to me, without doubt, to be epidemic, and for this reason I have applied the above name [epidemic catarrh]. I also am of opinion that it is contagious, and I think many circumstances tend to induce this idea and to prove it."[30]

However, proponents of these early theories could not substantiate their conclusions and did not agree with Way and Bayley who claimed that AHS was not contagious, because kraaling was a widely-used preventative measure. If the disease was indeed contagious, there would not have been as many survivors because kraaling entailed restricting the horses' movement by putting them in a small enclosure. This close contact between the animals would have been the ideal breeding ground for the disease. This was not the case – there was no apparent increase in the death toll of horses kept in kraals as compared to those roaming free on the veld.

Hutcheon proclaimed that no other animals were susceptible to the disease except horses, even when deliberately exposed to or injected with the disease.[31] Like others he established that the incidence of the disease increased when the seasons

26. Maclear, "Horse Sickness in South Africa", p 71.
27. D. Hutcheon, *Diseases of the Horse and their Treatment* (W.A. Richards & Sons, Cape Town, 1899), p 7.
28. Bayley, *Notes on the Horse Sickness at the Cape,* p 90.
29. Bayley, *Notes on the Horse Sickness at the Cape,* p 93.
30. Bayley, *Notes on the Horse Sickness at the Cape,* p 23.
31. KAB, Secretary for Agriculture (1876–1913) (hereafter AGR), Box 252, D. Hutcheon, "Paardenziekte", *Gouvernementsbericht 41*, 1892, p 1.

were warm and moist, having been preceded by a dormant winter.[32] These conditions were not only dangerous for AHS in South Africa but could be compared to climatic conditions that generated intermittent fever in the fens of Lincolnshire, the jungle fever between the tropics, the cholera in Bengal and the plague on the banks of the Nile.[33]

During the mid-nineteenth century, AHS was often likened to cholera. Medical men such as Hutton compared the diseases as they both have "a poisonous atmospheric agency".[34] The ideas about changes in the atmosphere, such as cold and moisture, suggest that there was still a vague understanding of the disease. These environmentally entrenched representations of disease had many supporters during the Victorian era (1837–1901), and were not immediately abandoned when the concept of germ theories emerged.[35] In addition, experimental treatment was impossible, because a bill was passed in England in 1822 "to prevent cruel and improper treatment of cattle".[36] This law outlawed cruelty to larger domestic animals such as cattle, horses, sheep, asses, cows and steers (while still excluding bulls, dogs, cats, pigs, goats, birds and wild animals). Furthermore, legislation passed in England in 1876, namely the Cruelty to Animals Act and the Antivivisection Act, regulated the use of experimental animals in British biological and medical research and teaching.[37] Experimentation was illegal on dogs, cats, horses, asses and mules under any circumstances, except under complete anaesthesia.[38] The Act to Amend the Law Relating to Cruelty to Animals, passed in England in 1822, was reinforced by a new Cruelty to Animals Act in 1876 and received the royal assent and support of the editor of the *British Medical Journal*.[39] These measures were of great importance because they limited the research and study of AHS in South Africa, which was a British colony at the time. South Africa was also obliged to adhere to English legislation because some of the veterinary research was conducted in Britain due to a lack of specialised research veterinarians in the country. South Africa passed its own Cruelty to Animals Act in 1888,[40] further limiting the methods used by the few scientists researching AHS in the country.[41]

Some of the research and testing of cures was not entirely painless for the horses, because the scientists tried many methods and remedies in order to assess their efficacy. However, Victorian scientific culture was marked by change; discoveries in medicine, mathematics and physical science were continually modifying the way

32. Maclear, "Horse Sickness in South Africa", p 71.
33. Maclear, "Horse Sickness in South Africa", p 71.
34. Bayley, *Notes on the Horse Sickness at the Cape,* p 34.
35. K. Brown, "Frontiers of the Disease: Human Desire and Environmental Realities in the Rearing of Horses in 19th and 20th Century South Africa", unpublished paper, p 8.
36. H. Ritvo, "Plus ça Change: Anti-Vivisection Then and Now", *Science, Technology, and Human Values*, 9, 2, 1984, p 58.
37. R. French, "Anti-vivisection and Medical Science in Victorian Society", *Isis,* 69, 2, June 1978, p 306.
38. R.D. Ryder, *Animal Revolution: Changing Attitudes towards Speciesism* (Oxford, Bergh, 2000), p 110.
39. Ryder, *Animal Revolution*, p 111.
40. This act was preceded by the Cruelty to Animals Act, No. 3 of 1875, but was later replaced by an act of 1888 to include all domesticated animals and birds. It also included all captured non-domesticated animals or birds.
41. Act No. 18 of 1888, *Acts of Parliament, Session of 1889* (Government Printer, Cape of Good Hope, 1889), p 2573.

people understood life. There was a shift from a focus on theory to a focus on basic observation.[42] The aims of the humane and the anti-vivisection political and moral protest movements of nineteenth-century England were not always identical, although their concerns did overlap.[43] The Society for the Prevention of Cruelty to Animals[44] (SPCA) was more inclined to acknowledge the demands of science than of other organisations, such as the above-mentioned movements exclusively concerned with animal experimentation. At about this time, British government recommendations, which were later passed to South Africa, were issued to prevent painful experimentation, but the public was aware of the value of scientific research and relied on the humane concern of the majority of the experimenters. All these elements influenced the research on AHS, and accounted for the slow investigation of the cure and transmission of the disease.

Most of the veterinarians during that time were very much a product of this confident Victorian science. Gradually, however, there was a change in scientific ideas. Researchers and scientists called on the help of the farmers and horse owners in order to gain a full picture of the disease; they needed information on the day-to-day use of horses. The more research that was conducted the better the researchers and farmers began to comprehend the disease and were able to draw certain theories and conclusions.

Experimental treatments and preventive measures

Because AHS was a disease that impaired the daily routine of horse users and thus affected people economically, many individuals became involved in finding a cure. Most horse owners had no background whatsoever in science and relied only on "practical experience", doing their best to cure and safeguard their horses.[45] This concern for the wellbeing of their horses was triggered and stimulated by the government's offer of prizes for finding cures for animal diseases. A cure for Redwater was rewarded with £25,000, and there was "a similar sum for the cure of horsesickness".[46] The colonial secretary wrote recommending "… the offer of rewards for the discovery of a practical preventative or cure of Horse Sickness and of Rhodesian Redwater or Tick Fever …',[47] which suggestion was later duly accepted by the legislative council.

42. B. Lightman (ed), *Victorian Science in Context* (University of Chicago Press, Chicago, 1997), p 180.
43. Ritvo, "Plus ça Change", p 58.
44. Founded in England in 1824 as a control group for the reinforcement of the cruelty acts, it received the prefix "royal" a year later from Queen Victoria.
45. KAB, AGR, Box 252, Letter to Secretary of Agriculture, 27 July 1892; and Transvaal Archives, Pretoria (hereafter TAB), Lieutenant Governor (1902–1907) (hereafter LTG), Box 54 [4066], Letter High Commissioner, Johannesburg – Lieutenant Governor, Transvaal, 10 November 1903; Letter Director of Agriculture, Pretoria – Lieutenant Governor, Transvaal, 29 September 1903.
46. TAB, Colonial Secretary (1900–1910) (hereafter CS), Box 424 [785], Letter John Turton, Pretoria – Colonial Secretary, 29 January 1904.
47. TAB, Legislative Council (1902–1907) (hereafter LC), Box 129 [567/03], Letter Under Secretary, Pretoria – clerk of Legislative Council, 29 September 1903.

The government was not granting the appointed researchers the necessary time to find cures, as time was a luxury they did not have; the longer the farmers had to wait for remedies, the more animals were dying and the greater the economic loss to the country. This was a sensitive topic for the scientists appointed by the government, as such cash prizes challenged numerous people to find cures. Sometimes less scholarly remedies (with no scientific background), were peddled by horse owners whose horses had recovered from AHS. Many such "remedies" were published and bought by horse owners without any guarantee from scientists or researchers on their effectiveness. This undermined the authority of the scientists. Indeed, AHS and the quest to find a cure even attracted attention overseas, and people started writing from Britain, Australia and New Zealand professing to have discovered cures.[48] Another problem that arose from the cash incentives on offer was the enormous number of letters (all of which had to be investigated) received from people who claimed to have found cures and who demanded money before revealing their cures and treatment.[49] Hutcheon warned against the remedies published by quacks, requesting increased support from the government for research undertaken and proposed treatments developed by bona fide scientists.[50]

Researchers often tried to inoculate horses with the disease to gain a better understanding of AHS and possible treatments for the disease. It is interesting to note that when the researchers received permission from the government to buy horses for experiments, it was specified that high-bred horses were unsuitable for this purpose because those breeds were more severely affected by equine diseases than veldt horses.[51] This is a theory still existing today. For example, a hardened South African breed, such as the Boerperd, is less inclined to fall ill during an AHS outbreak than a Dutch imported Friesian.

Another so-called remedy demonstrating a lack of specific knowledge of AHS and revealing a hint of desperation, came from a certain Cooper of Somerset. He published a remarkable treatment method that a sick horse should be "hung up by his hind legs from the beam of the stable three or four times a day for a few minutes, so that the discharge from his lungs may run out mechanically".[52] W.K. Steen wrote to the colonial secretary to distribute with all haste in all government gazettes and local papers the following cure:

> As soon as the animal is attacked with sickness, saturate sponge with pure ether, place sponge in [nose] bag in one pint of water, put half the six oz bottle of ether quantity, drench and then put nose bag on horse. Two days after, drench the horse with 3 oz glycerine and one pinch [sic?] water.[53]

48. TAB, CS, Box 351 [7713], Letter Mackinnon, London – Colonial Secretary, 8 July 1903; TAB, CS, Box 351 [7722], Letter John McMahon, Wellington – Transvaal Government, 8 July 1903; and TAB, CS, Box 351 [7738], Letter Colonial Secretary – Australian Minister of External Affairs of Commonwealth, 12 August 1903.
49. KAB, AGR, Box 252 [105], Letter E. Korinsky – Colonial Secretary, 4 April 1894.
50. KAB, AGR, Box 252 [455], Letter D. Hutcheon – Colonial Secretary, 17 January 1898.
51. KAB, GCCR, [A12-'95], A. Edington, *Correspondence Relating to the Investigations by Dr A. Edington, Director of the Bacteriological Institute, into the Nature and Causes of Horse Sickness*, 1895, p 5.
52. Bayley, *Notes on the Horse Sickness at the Cape,* p 30.
53. KAB, Colonial Office (hereafter CO), Box 7273 [46], Letter W.K. Steen, Mashonaland – Colonial Secretary, 2 August 1899.

Lambert, a horse breeder and owner, was cautious in the use of nose bags. This method was used during the Anglo-Zulu war to filter the night air and stop the horses from eating the dewy grass, but it remained unclear whether it made the horses less liable to contract AHS than those not wearing a nose bag.[54] P.J. van der Merwe from Worcester encountered AHS on his farm, and found the following treatment very effective "out of experience". He would paint a line about two inches wide with a paintbrush soaked in tar along the length of the stable so that the sick horse constantly inhaled the smell of the tar.[55] He found that when he employed this method on infected horses, it drove the disease away quickly. Hutcheon had his doubts whether the tar had an arresting effect on the spread of the disease among stabled horses, or if it cured the disease.[56] Although warning horse-owners about the dangers of using tar for a prolonged period of time, he did recognise the disinfectant character of tar in such circumstances, but only in helping to prevent the spreading of certain germs. But he was reluctant to believe that such a small line of tar could prevent the spread of the disease in a stable full of infected horses. P.J. van der Merwe's remedy was simple and inexpensive, but his personal experience was insufficient to persuade Hutcheon to appoint tar as the acknowledged preventative method for diseases such as AHS and strangles.[57]

Hutcheon recommended arsenic and sulphur as the only two remedies that horse owners could use repeatedly during AHS outbreaks without impairing the general health of the horse.[58] Giving sulphur in small quantities was regarded as safe because only a little is converted into sulphides and sulphured hydrogen, which is very destructive to plant life. Arsenic could also be given in small doses without causing bad side effects. His recommendations were liquor arsenicals, one fluid ounce daily, together with a teaspoonful of flowers of sulphur mixed with some bran or spread over the forage. One of the most effective treatments that Hutcheon stood by was the use of repeated stimulants, hot blankets and fresh air. Mustard was used as a counter irritant.[59]

Hutcheon was also very explicit when it came to the method of administering medicine to a horse. He regarded it as cruel and unnatural to pour medicine directly into a horse's nostril, as this is extremely stressful for the animal, especially when dosing with the irritant substances and stimulants that were often used in experimental AHS treatments. He wrote: "The unfortunate animal cannot, however, help swallowing the medicine when it is poured down his nostril; hence it is the attendant's ease and comfort which is studied, not that of the horse." [60]

Marshall Campbell of Natal used a totally different treatment for AHS. He claimed to have cured 20 of 21 cases by administering intoxicating doses of alcohol. "Brandy, cheap quality used in doses of half a bottle with a wine glassful of water

54. Lambert, *Government Notice 448,* 1881, p 3.
55. P.J. van der Merwe, "The New Disease among Horses", Correspondence, *Agricultural Journal,* 1, 15, 1888, p 129.
56. D. Hutcheon, "Diseases of the Horse", *Agricultural Journal,* 2, 1, 1889, p 154.
57. Strangles is a critical infectious disease caused by the Streptococcus equi bacterium. It produces abscess of the lymph glands in horses.
58. Hutcheon, *Diseases of the Horse and their Treatment*, p 9; R. Wallace, *Farming Industries of the Cape Colony* (King, London, 1896), p 322.
59. Wiltshire, *Government Notice 192*, 1878, p 2.
60. Hutcheon, *Horse Sickness,* p 13; Hutcheon, "Paardenziekte", p 5.

added; this dose is repeated every quarter of an hour, until the animal becomes intoxicated. From two to three bottles are sufficient to produce the desired effect."[61]

Hutcheon expressed his hesitation in accepting this treatment. He argued that alcohol's initial effect was to stimulate the heart, exciting the cerebral circulation, while the secondary effect paralyses different parts of the brain. He therefore only recommended the first part of the treatment and administering alcohol to the horses on the verge of paralysis, although he thought there was a possibility that the alcohol could also slow down the germs causing AHS.

Korsensky also believed in the curative qualities of alcohol. His remedy was a mixture of half a pint of brandy or wine and a teaspoon of ground black pepper.[62] Bleeding was another method often used, and Hutcheon was in favour of bleeding sick horses – on condition that it was done in the early stages of showing AHS symptoms.[63] This method was traced back to a custom in the Victorian era when this was also used as a remedy for human diseases. Wiltshire had, however, proclaimed years earlier that bleeding could only be used as a last resort because it was often carried too far, impairing the recovery process of the horse or even killing the animal.[64]

Rutherford did not insist on medical treatment for AHS, arguing that the disease progressed too fast.[65] He found from experience that the most effective treatment was administering a pint of raw linseed oil, followed by a powerful stimulant such as brandy or whisky given in a frequent dose. The horse's chest, liver and any swellings had to be kept warm using hot blankets, but the animal's head and nape of the neck were to be cooled with a cold, wet cloth. He recommended that the food be soft, palatable and nutritious and be followed by a quarter-ounce dose of nitre and some carbonate of ammonia in the horse's drinking water. Rutherford also believed in the beneficial remedial properties of carbolic acid, giving 60 drops three or four times a day with a pint of water and one or two wineglassfuls of oil to prevent the mixture from burning the throat. He did not believe in curing AHS by bleeding or blistering sick horses.[66]

The most effective way of preventing AHS was not ointments, medicines or infusions, but simply stabling the animals. This was discovered relatively early by horse owners and farmers, and was encouraged by researchers. Some horse owners were more cautious, however, and claimed that stabling would protect the horses but not entirely safeguard them from the disease.[67] Breeders started to work their horses only during the day, stabling them early. Kraaling was used as an alternative when breeders had insufficient or no stables, but this was bad for pregnant or feeding mares and young foals, because they were chased into the kraal every day, thus stressing them unduly. This preventative method did help when the kraals were erected on

61. Hutcheon, *Diseases of the Horse and their Treatment,* p 9.
62. KAB, AGR, Box 252 [105], Letter D. Hutcheon – Minister of Agriculture, 16 September 1892.
63. Hutcheon, *Horse Sickness,* p 11.
64. Wiltshire, *Government Notice 192*, 1878, p 2.
65. Rutherford, "Horse Sickness of South Africa", p 6.
66. Rutherford, "Horse Sickness of South Africa", p 6.
67. Lambert, *Government Notice 448,* 1881, p 3.

elevated sites, where the night air temperature was warmer and where the body temperature of the horses helped to counteract the change of temperature after sunset.

It had already been widely observed simply through the farmers' practical experience, that horses grazing on higher lands were relatively AHS free. Mountainous areas were therefore often reserved by local authorities as sanctuaries for the horses in the surrounding vicinity. This sometimes caused friction among livestock holders because they did not always understand why horse owners enjoyed preferential treatment from the field cornets.[68] A livestock holder, Lodewyk Wiese, wrote to the civil commissioner of Clan William that his cattle should also have the right to graze on the higher ground. He was denied that right, however, because these pastures were reserved for horses during the AHS seasons.[69] Although AHS was a disease that had a serious impact on horses and the evolving industry, it was not always well understood by farmers or people who had no horses, or those who were uninformed on the importance of horses. This again demonstrated the lack of awareness of the disease, and indirectly affected the seriousness of outbreaks due to the lack of practical measures taken to prevent friction among farmers.

As previously mentioned, dew and grazing were also considered a definite risk. Hutcheon subscribed to this view and recommended the use of properly constructed nose bags made of very porous cloth, kept moist with a carbolic acid solution or similar disinfectant and placed on the horses' heads when exposed to the night air.[70] However, he did warn against the continuous use of carbolic acid and tar derivatives, as they could be dangerous if used for a lengthy period, and could impair the health of the animal.

Bleeding was another method used by horse owners and scientists either as a treatment or a preventative measure. A veterinarian was summoned to provide "medical treatment" when an owner suspected that a horse was infected (a dull animal, disinclined to feed). It was not uncommon that a horse was bled more than once. Some animals did survive the bleeding, but again it was unsatisfactory to attribute a definitive cure for AHS to bleeding, because the first signs of sickness could have been indicative of any of a number of other diseases.

It was recommended by veterinarians that horses that died from AHS should be buried six feet deep in poor, dry soil together with all the debris (froth, manure, excrement) and set apart, confined by bush or rails.[71] Cremation was regarded as an even better method against the spread of the disease, as it was still a common belief that AHS was highly contagious. Rutherford even warned against handling carcasses, because he believed that it was possible to contract blood poisoning if the blood of the dead horse entered the handlers' bloodstream.[72] Drainage of swamps was also an effective preventative method and remains so today. In those years it was believed that swamps harboured the deadly disease germ. No one had yet made the connection between mosquitoes and midges that are very prevalent around swamps and ponds.

68. KAB, CO, Box 4015 [657], Letter from memorialist C. Holtman re Lodewyk Wiese – Major General Sir George Thomas, 10 October 1842.
69. KAB, CO, Box 4015 [657], Report from Field Cornet A. van Zyl, 29 November 1842.
70. Hutcheon, *Diseases of the Horse and their Treatment*, p 9.
71. Rutherford, "Horse Sickness of South Africa", p 7.
72. Rutherford, "Horse Sickness of South Africa", p 8.

The preventative measures outlined above reveal the primitive state of the data on AHS, and of scientific progress itself, during that time. Most of these techniques were developed from the practical knowledge of the farmers and adopted by the scientists, who carried out research on them. Furthermore, they were often the cause of the high death rates during AHS outbreaks, as many owners insisted on implementing these defensive measures or treatments, which were, as was later discovered, completely ineffective. This insistence on the part of the horse owners and farmers to persist with such measures indirectly slowed down the scientific research, because the researchers tended to focus on the practical knowledge they accumulated from horse owners and farmers.

AHS outbreaks were an eye-opener for the government. It was clear that some policies had to be changed, developed or adapted to provide better protection for horses, a valuable commodity in the economy. Because the country was developing, there were more imports and exports, putting South Africa at greater risk of importing diseases.

The above-mentioned experimental treatments and preventative measures used against AHS demonstrate the early, under-developed status of veterinary science in South Africa and the desperation of farmers and horse owners to cure their horses of this disease. Although most of the treatments discussed here seem absurd today, it must be kept in mind that horse owners were dealing with a disease of which they had incomplete knowledge. They could also count on only partial support from the scientific world, because a limited number of researchers were involved in investigating AHS. The early preventative methods used demonstrate this lack of practical knowledge and the inadequacy of science. This state of affairs was, however, about to change.

Development of veterinary science in the country: Colonial veterinarians

While Europe was already stable and established, South Africa was a new territory that needed to develop into a successful colony. Veterinary medicine was not always on top of the 'necessary development' inventory, especially in the early years of colonisation. However, with the rapid growth of the colony, it was soon realised that disease had to be curbed. The outbreaks of various animal diseases placed stress on agricultural production and increased the proximity of residential areas to those where animals had died.

The roots and foundation of South African veterinary knowledge came from Western tradition but most South African animal diseases were unknown to British veterinary science. The first veterinarians were from Britain and were only familiar with British veterinary science; they brought this knowledge when they came to South Africa. They were able to deal with familiar diseases but were out of their depth when it came to the many animal diseases indigenous to the country. This created a problem in formulating and executing an effective veterinary policy. The veterinarians were required to investigate illnesses unknown to them, making them dependent on the knowledge and experience of stock owners. Basically, they worked on a trial and

error basis. Not only did the effects of AHS cause alarm, but other animal diseases also needed their attention.

The rinderpest epizootic of 1896–1898 had major consequences, and made it clear to farmers that it was time for a reaction from the government on the control of animal diseases.[73] Not only did the lack of specific knowledge make it difficult to combat stock disease but professional rivalry and the superstitious (non-scientific) treatments used by the farmers and stock owners made it no easier. Veterinary policies were based on the British model of quarantine and slaughter,[74] but this was unsustainable in the developing colony because it was politically controversial and unaffordable, especially for AHS. Slaughter came to be seen quite early as useless. As Hutcheon wrote: "You may kill every horse and mule in the Colony, and introduce an entirely new race, but the wholesale slaughter would not affect the prevalence of horsesickness one bit",[75] because, quite simply, the disease was not contagious.

The difficult situation between livestock holders and researchers was exacerbated by the fact that veterinarians had a great deal of political power, and there was no communication platform between farmers and scientists. The assistance of farmers, breeders and stock owners was necessary for the veterinarians because they needed not only their knowledge but also their participation in experiments. Researchers began to apply scientific methods based on immunology, using local knowledge to develop techniques of preventative inoculation. Legislation was passed for the isolation of infected cattle during the lungsickness epidemic in the 1860s, and lines were drawn in the battle over scab control, another indigenous disease. The Cape government passed a Scab Act in 1874 to advise farmers on the control of the disease by limiting animal movement.[76] This was not well received, largely because the farmers resented the external interference. Although the epizootic was responsible for the death of many animals, it prevented the government from continuing its policy of regulating veterinary policies. The regulations produced political tension because they helped to spread scientific ideas and techniques across the colony while government policy was based on voluntary programmes to deal with the rinderpest disease.[77] Furthermore, although the efforts to control the disease were directed primarily at European farmers, the indigenous population regarded veterinary science as an instrument the colonists were using against them.

The first scientists at the Cape, researchers and veterinarians such as Edington, Hutcheon and Theiler, did not initially have the resources to conduct more profound research. The "laboratories" used by the first scientists were very primitive and small, and the number of personnel manning them hardly capable of coping with the many demands and experiments. The veterinary services received more attention during the rinderpest epizootic, however, which was one of the worst pandemics of animal disease to hit the country. Once again, the authorities had to face the need for an

73. W. Beinart, *The Rise of Conservation in South Africa: Settlers, Livestock and the Environment, 1770–1950* (Oxford University Press, Oxford, 2003), p 132.
74. D. Gilfoyle, "Veterinary Research and the African Rinderpest Epizootic: The Cape Colony, 1896–1898", *Journal of Southern African Studies*, 29, 1, March 2003, p 133.
75. D. Hutcheon, "Diseases of Animals, Review: Horses and Cattle Diseases in the Colony", *Agricultural Journal,* 16 November 1893, p. 447.
76. Beinart, *The Rise of Conservation in South Africa*, p 135.
77. Gilfoyle, "Veterinary Research and the African Rinderpest Epizootic", p 133.

effective veterinary service and the necessity of proper investment in this initiative. The epizootic taught the Cape to deal with a serious disease outbreak effectively, since more money was made available for extensive research and experiments, and veterinary positions in the Department of Agriculture were reinforced. The specific duties that government and individuals had to employ to promote and protect the health of their animals became clearer, as did the areas in which the government lacked guidance. For example, the Cape Colony realised that it needed urgent assistance, and appointed a German physician, Robert Koch, to undertake research on AHS. Meanwhile, Natal employed Watkins-Pitchford[78] in 1897 and he founded the Allerton Laboratory the next year.[79] Two years later, the government established the first bacteriological institute in Grahamstown, under the professional eye of Alexander Edington, who had already set up a laboratory for investigating modern methods of bacteriological investigation to tackle the most destructive stock diseases in South Africa.[80] In this new institute, intensive research was conducted into diseases common to the area, including AHS. But because there was no uniform legislation and no centralised institution in the country to which the scientists had to report, problems arose. In minutes dated 30 May 1905, taken at the Cape prime minister's office, there is support for Hutcheon's investigation into AHS and Koch's preventative inoculation trials, but it was pointed out that several experts were engaged in similar studies in different parts of the country.[81] Due to a lack of coordination, therefore, many of the scientists were working along similar lines simultaneously, and this was a recipe for friction, which added to the pressure they were under to find cures for all of the "new" tropical diseases. They were often too early in proclaiming a cure, and frequently found they had to contradict themselves and one another,[82] which did not reassure the public.

Even though there were only a few veterinary scientists in an isolated country, they were in communication with the British Medical Association, conveying their findings. The government rarely permitted its appointed veterinary scientists, such as Edington and Koch, to travel to foreign institutes to keep themselves up to date with new developments in the field, and the few accounts appearing in French, English and German journals were short, incomplete and often useless. These two factors contributed to making the South African-based veterinary scientists independent in their ideas and authority, because there were no outside influences on their thinking.[83] The communication between the South African scientists and the British Medical Association, and the rare travels to foreign institutes, helped them to receive

78. In May 1896, an Englishman, Herbert Watkins-Pitchford MRCVS, was selected by the Natal government for the post of principal veterinary surgeon.
79. D.W. Verwoerd, "A Brief Historical Review of Research Achievements by the OVI during the 20th Century against the Background of Socioeconomic and Political Developments in South Africa", *Journal of the South African Veterinary Association,* 71, 4, 2000, p 210.
80. Notes on the Department, *Agricultural Journal,* 11 February 1892, p 1.
81. KAB, Government House (hereafter GH), Subject File Series (1881–1911), Box 35/125 [96], Minute from Prime Minister's Office, Cape Town, 30 May 1905.
82. KAB, CO, Box 7273 [46], Letter N.K. Steen – Colonial Secretary, 18 July 1899; and Letter Edington – Colonial Secretary, 30 April 1900.
83. KAB, Cape Colony Publications (1652–1910) (hereafter CCP), Box 1/2/1/91 [A13-'95], Application from Edington, colonial bacteriologist, 1895; and KAB, AGR, Box 252 [A13-'95], Correspondence re investigations by Edington, director of Bacteriological Institute, into the nature and causes of horsesickness, June 1895.

international attention when they eventually conducted further research, following the establishment of Onderstepoort years later.

The South African Republic later appointed Arnold Theiler,[84] a Swiss veterinarian arrived in South Africa in 1891. As the Transvaal's first state veterinarian, Theiler was given the specific task of combating rinderpest and AHS in 1902.[85] Theiler took this responsibility seriously and established a field laboratory in Marico, which was later moved to Waterval, north of Pretoria. In 1897 he founded Daspoort, originally a military barracks,[86] and turned it into a permanent laboratory. The government recognised the need for veterinary research, and was highly supportive of the activities at Daspoort and other state-run laboratories.

Although the researchers seemed to struggle to discover the causes and appropriate cures for certain diseases, some were successful. In 1895, various major discoveries included the identification of the trypanosome that causes nagana, and the tsetse fly as its vector. Five years later, a specific tick was identified as being responsible for causing heartwater.[87] These discoveries strengthened the belief and the trust of the government in the need for well-qualified researchers and scientists and for the expansion of laboratories.

These developments came to a standstill with the outbreak of the Anglo-Boer War (South African War) in 1899. The widespread destruction of farms and livestock during the war and the desperate economic straits once peace was declared, made the development of veterinary services extremely difficult. The situation was worsened by the outbreak of new diseases arising from the importation of horses for the British army.[88] The country was still unaware of a number of indigenous diseases and the expansion of AHS, but soon encountered them when colonisation expanded to parts of the country not yet claimed. Animal diseases, both indigenous and imported, spread rapidly. The imported diseases were regarded as particularly serious; they had a major influence on the development of the country, largely because South Africa was still heavily dependent on the use of animals. The government was desperate to find solutions to cure and curb such diseases and in 1903 issued a resolution to conduct joint negotiations with the governments of Cape Colony, Natal, Orange River Colony and Rhodesia. A prize or bonus was offered for the discovery of practical prevention or cures for AHS, Rhodesian redwater and tick fever.[89]

Hutcheon and Theiler realised that many of the prevalent diseases shared similarities; others had no specific symptoms, making them unrecognisable in some instances. Alternatively, some diseases were only known under local names. For example, lungsickness and redwater in cattle have similar characteristics and this

84. For more information on Arnold Theiler, see T. Gutsche, *There was a Man: The Life and Times of Sir Arnold Theiler, KCMG, of Onderstepoort* (Timmins, Cape Town, 1979).
85. P.J. du Toit and C. Jackson, "The Life and Work of Sir Arnold Theiler", *Journal of South African Veterinarian Medical Association,* 7, 4, 1936, p 136.
86. R.D. Bigalke, "Onderstepoort Today Yesterday and Tomorrow", Commemorative lecture, *Onderstepoort Journal of Veterinary Research,* 52, 3, 1985, p 126.
87. Verwoerd, "Brief Historical Review of Research Achievements", p 210.
88. One of the most serious new diseases introduced into the country by the importation of livestock from East Africa in order to restock, was East Coast Fever.
89. Free State Archives, Bloemfontein (hereafter VAB), CO, Box 189 [4972/03], Letter Colonial Secretary, Pretoria – Colonial Secretary, Orange River Colony, 9 July 1903.

made curing these diseases particularly difficult. Although scientists were well aware of their existence, they did not realise immediately that they were perhaps dealing with a known disease that locals had given a different name.[90]

Until 1902, the Cape Department of Agriculture was the most important generator of knowledge on southern African animal diseases and their prevention.[91] Thereafter, information was increasingly produced in the Transvaal, particularly through the efforts of Arnold Theiler.

At that time it was not only in South Africa that there was a growing interest in animal diseases. Other countries also began to take greater interest in tropical diseases of animals, giving southern Africa international attention in the veterinary field. The founding of new journals, both nationally and internationally, increased the flow of information and the generation of knowledge became less autochthonous, even for AHS. AHS was closely followed by the Central Veterinary Medical Society in Paris, and the preliminary findings were communicated in the *Veterinary Record*.[92] Professor John MacFadyean, principal of the Royal Veterinary College in London, experimented with infected blood from South Africa and used the blood to repeat Edington's experiments in Britain.[93] He communicated his findings in the *Journal of Comparative Pathology and Therapeutics* that was widely read by researchers in South Africa. The International Convention of Veterinarians, held at Budapest in 1905, also created public interest in issues of veterinary hygiene practised in South Africa.[94]

Daspoort eventually became unsuitable for Theiler's widening range of research. It was also too small to cater for the increasing demand for vaccines.[95] Besides, the laboratory was unhygienic, which made it a dangerous threat to human health. Theiler lost several assistants to typhoid fever.[96]

Louis Botha was also a farmer, and Theiler and Botha became well-acquainted when both served during the Anglo-Boer War. Theiler benefited greatly from this relationship[97] because Botha, who became prime minister and minister of agriculture of the Transvaal in 1907, attended promptly to urgent requests from Theiler and was able to convince parliament to invest £80,000 to modify De Onderstepoort farm into

90. KAB, AGR, Box 252 [193], Letter Department of Foreign Affairs, Pretoria – Under Secretary for Agriculture, 3 September 1895.
91. Gilfoyle, "Veterinary Science and Public Policy", p 293.
92. M. Nocard, "Horsesickness in South Africa", *Veterinary Record,* 16 February 1901, p 435.
93. D. Gilfoyle, "Veterinary Immunology as Colonial Science: Method and Quantification in the Investigation of Horsesickness in South Africa c. 1905–1945", *Journal of the History of Medicine,* 61, January 2006, p 35.
94. A. Theiler, "Veterinary Hygienic Principles Applicable to Stock in South Africa", *Transvaal Agricultural Journal,* 5, 1906, p 567.
95. G. Theiler, *Arnold Theiler, 1867–1936: His Life and Times* (Publication of the University of Pretoria, Pretoria, 1971), p 8.
96. Bigalke, "Onderstepoort Today, Yesterday and Tomorrow", p 126.
97. R.D. Bigalke and D.W. Verwoerd, "A Century of Research Achievements by the Onderstepoort Veterinary Institute", *Transactions of the Royal Society of South Africa*, 63, 2, p 32.

Onderstepoort Laboratory in 1908, only seven years after the conclusion of a devastating war.[98]

Establishment of Onderstepoort

Onderstepoort Veterinary Laboratory (today called Onderstepoort Veterinary Institute) officially opened its doors on 8 October 1908, and soon became an important centre in the international network of veterinary science in South Africa. The Transvaal government purchased the land north of Pretoria, chosen by Theiler for its location and large acreage, for £1,500.[99] Onderstepoort was ideally situated in the bushveld close to Pretoria, the capital of the Transvaal, and had good access to a rail network. There was a railway siding at the laboratory that made it possible for animals from infected areas to be sent directly through to the laboratory and placed in quarantine with the least possible delay.[100] Onderstepoort was also connected by a telephone line to Pretoria Central Exchange, making communication possible with Johannesburg and the whole of the Witwatersrand, as well as Pietersburg, Klerksdorp, Potchefstroom and Zeerust. It was also an ideal study field, since AHS and poisonous plants were very prevalent in the Transvaal. The chief architect at the Public Works Department, Patrick Eagle, drew up the plans for the institute according to the specific suggestions Theiler made after a visit to Europe.[101] He aimed to make Onderstepoort the most up-to-date bacteriological institute, and his plans included creating laboratory buildings and stabling for a variety of animal species. He also made provision for farm services, staff quarters and transport.

Onderstepoort was so revolutionary that it was dubbed the "Extravagant Palace of Science". The white locals and black workers called it the 'Sick Line' because horses were often lined up to undergo experiments.[102] The "Palace of Science" included facilities for small animals such as dog kennels, a piggery, and an isolation stable. There were also forage stores, workshops, a farrier, a saddler and sheds for buggies, wagons and farm implements. Hygienically it was a great improvement on Daspoort; all rooms were planned with a flue, and a large incinerator was built for the disposal of refuse and carcases.[103]

All these buildings, which are still in existence more than a century later, are proof of the serious intentions of Onderstepoort as a veterinary research centre. It was here that veterinary research was, for the first time, centralised around comprehensive buildings with all the necessary facilities to aid human and animal health.

Starting with a total budget equivalent to R17 294 and a staff comprising six professionals, five technicians and twelve auxiliary personnel, the laboratory made

98. No author, "The Onderstepoort Veterinary Research Laboratory, 1908–1958", *Onderstepoort Journal of Veterinary Research,* 28, 4, p 573.
99. K. Brown, "Tropical Medicine and Animal Disease: Onderstepoort and the Development of Veterinary Science in South Africa, 1908–1950", *Journal of Southern African Studies,* 31, 3, September 2005, p 518.
100. KAB, GCCR, [TG35-'09], "Veterinary Bacteriological Laboratories", Transvaal Department of Agriculture, 1909, p 1.
101. Bigalke and Verwoerd, "Century of Research Achievements", p 32.
102. Bigalke and Verwoerd, "Century of Research Achievements", p 33.
103. Theiler, *Arnold Theiler: His Life and Times*, p 10.

some ground-breaking discoveries.[104] Theiler found the East Coast Fever organism (later named Theileria parva) and its vector; and Watkins-Pitchford developed the dipping routines that eradicated the disease. Theiler also discovered the causal organism of gallsickness, with blue tick as its vector. He identified Trypanosoma Congolense as the main cause of nagana and, by means of filtration experiments he was able to prove the viral nature of AHS and blue tongue. Importantly, the first steps were taken towards preparing a vaccine for AHS.

Onderstepoort was extremely successful as a research station, especially during the interwar years and probably at least until the 1960s, producing many important research papers on plant toxicology, immunology, nutrition and increasingly effective AHS vaccines.[105] Disease prevention and control in South Africa made remarkable strides and the need to control and prevent disease became more readily accepted by livestock farmers. The services provided by the Veterinary Department promoted this trend because it made dipping and vaccination widely available, even though they were often compulsory.

Not long after the establishment of Onderstepoort, it became clear that South Africa had a shortage of veterinarians, and that this need was likely to increase in the future because the stock industry expanded and farming methods became more intensive. No school in Europe could offer South African students all the facilities they required to equip them for their future careers. South African students needed to have a background of Western medical tradition of animal science, but also required the specific practical experience relevant to southern Africa. This was impossible to learn overseas. The first South African veterinarian students graduated from the veterinary college at Onderstepoort in 1926.[106]

Conclusion

The first colonial veterinarians in South Africa came to the country with expertise in Western animal science. They soon realised that this was hardly adequate for the task of improving the general health of animals in South Africa. Their Western knowledge, however, was a firm foundation that helped them, with additional practical experience, to reach a better understanding of the tropical diseases distinctive to southern Africa.

AHS presented the country with significant hurdles for horse breeding and farming in South Africa. Arnold Theiler, the founder of Onderstepoort and head of veterinary research, was driven to find a remedy "which would mean so much to the prosperity of the horse breeder, the welfare of South African agriculture, and last but not least, the mitigation of a great mass of animal suffering annually sustained by man's patient friend and servant – the horse".[107] Onderstepoort and its scientists did

104. Verwoerd, "Brief Historical Review of Research Achievements", p 210.
105. K. Brown and D. Gilfoyle, "Introduction: Livestock Diseases and Veterinary Science in Southern Africa", *South African Historical Journal*, 58, 2007, p 4.
106. A. Theiler, "Hoe Wetenskap die Veeboer kan Help: Ondersoek en Onderwys op Onderstepoort", *Boerdery in Suid-Afrika,* December 1926.
107. H. Watkins-Pitchford, "Horsesickness and its Prevention", *Agricultural Journal,* 34, 1909, p 236.

ground breaking research and contributed to a better understanding of AHS. It reflected the notion that AHS research and indeed research on other diseases could be conducted on a bigger scale and in a better environment.

AHS is attracting much more attention today; people have begun to realise the many serious implications of the disease. It has become clear that AHS not only has an impact on the number of horses, but has complications that are far-reaching. AHS is a disease that is largely ignored except by those involved in its scientific study. Many articles continue to be written on the scientific minutiae of the disease; however, comprehensive and accessible information for those outside the scientific discipline is comparatively scarce. This is changing somewhat today, because South African books and articles about horses do provide general information on the impact of AHS, and often mention this disease in separate columns or under specific headings. AHS is also included when the effects of diseases in animals are discussed, but a broad history of the social implications of the disease has not yet been adequately addressed.

AHS had a major impact on South Africa's early development because it reduced the number of working horses. Serious outbreaks of animal disease such as AHS were indicative of the need for a more profound and better developed veterinary science. AHS thus pressurised the South African authorities to reassess the adequacy of existing veterinary facilities and contributions to veterinary science, and was the motivation to erect one of the most influential veterinary research facilities in the country. The veterinary developments that grew from the initial research into AHS also made a major contribution towards fighting other devastating animal diseases like rinderpest. However, scientists are still trying to develop improved vaccinations against AHS. By indicating that a cure for AHS was and still remains a necessity, this article has demonstrated that the disease was the reason behind the rapid and highly necessary development in veterinary science in South Africa from the 1860s to the 1920s.

Abstract

Veterinary science was underdeveloped in South Africa prior to the early twentieth century. Horses were crucial to the country's (economic) development, and therefore the health of these animals became very important to South Africa; any horse disease had a major impact on the country's progress. A study of AHS is not only about sick or dead horses; it goes beyond the obvious and uncovers the many social implications that animal disease can cause. AHS has been encountered in South Africa since the first horses arrived in the Cape when Jan van Riebeeck disembarked and even today the disease is not uncommon. Due to its active presence, AHS had an impact on far more than the economic development of the country.

Opsomming

"Die verhaal van 'n siekte":
Afrika-perdesiekte en die direkte invloed daarvan op die noodsaaklike ontwikkeling van veeartsenykunde in Suid-Afrika vanaf ongeveer die 1890's tot die 1920's

Voor die vroeë twintigste eeu was veeartsenykunde in Suid-Afrika onderontwikkel. Perde was in daardie stadium van deurslaggewende belang vir die land se (ekonomiese) ontwikkeling. Die gesondheid van hierdie diere was dus baie belangrik in Suid-Afrika aangesien enige perdesiekte 'n groot impak op die land se vooruitgang gehad het. 'n Studie van Afrika-perdesiekte gaan daarom nie net oor siek of dooie perde nie; dit strek verder as die voor die hand liggende feite en belig die vele sosiale implikasies van 'n dieresiekte. Afrika-perdesiekte kom in Suid-Afrika voor reeds sedert die eerste perde saam met Jan van Riebeeck aan die Kaap geland het, en dit is vandag steeds 'n baie algemene siekte onder perde. Weens die hoë voorkoms daarvan het Afrika-perdesiekte 'n impak wat veel verder strek as die ekonomiese ontwikkeling van die land.

Keywords

African horsesickness (AHS); horses; veterinary development; Arnold Theiler; Duncan Hutcheon; animal disease; rinderpest; colonial veterinarians; Contagious Disease Act; Department of Agriculture; Louis Botha; Onderstepoort

Sleutelwoorde

Afrika-perdesiekte, ontwikkeling van veeartsenykunde; Arnold Theiler; Duncan Hutcheon; dieresiekte; runderpes; koloniale veeartse; Wet op Aansteeklike Siektes; Departement van Landbou; Louis Botha; Onderstepoort