

## Perceptions and problems of disease in the one-humped camel in southern Africa in the late 19th and early 20th centuries

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### ABSTRACT

The one-humped camel (*Camelus dromedarius*) was first introduced to German South West Africa (Namibia) for military purposes in 1889. Introductions to the Cape of Good Hope (South Africa) in 1897 and Rhodesia (Zimbabwe) in 1903 were initially with a view to replacing oxen that died of rinderpest. Disease risks attendant on these introductions were recognised and to some extent guarded against. There were, however, relatively few problems. One camel was diagnosed as having foot-and-mouth disease. Mange in camels from India caused some concern as did trypanosomosis from Sudan. Trypanosomosis was introduced into both the Cape of Good Hope and Transvaal. Antibodies to some common livestock disease were found in later years.

**Key words:** Animal imports, antibodies, foot-and-mouth disease, rinderpest, sarcoptic mange, trypanosomosis.

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### INTRODUCTION

The one-humped camel (*Camelus dromedarius*) was imported into southern Africa towards the end of the 19th and in the early years of the 20th centuries. In Herero tradition, 1889 is known as the 'Year of the Camel' as in this year camels were imported to German South West Africa (now Namibia). These were brought from the Canary Islands for service with the Schutztruppe or defence force<sup>9</sup>.

The 'great African cattle plague' (rinderpest) probably arrived in sub-Saharan Africa between 1887 and 1889 with cattle brought into Eritrea by the Italian Army<sup>12,15</sup>. By early 1896 the disease had traversed the Zambezi River. During its southward progression it 'mowed down the whole bovine race in its passage' and 'hundreds of carcasses lay here and there, on the roadside, or piled up in the fields'<sup>7</sup>. It had not reached the Cape Colony (South Africa) by March 1896 because it was not reported in a survey of South Africa at that time, but it did so shortly afterwards<sup>20</sup>. There are conflicting accounts of numbers and percentages of the totally naïve population that succumbed to the disease but they were certainly enormous. The rural economy was at risk of collapse, as transport and land cultivation depended on oxen. It was thought

that camels might provide an alternative source of power. The 'Ville de Pernambuco' docked at Cape Town on 27 March 1897 out of Tenerife, Canary Islands, via Luanda, Angola, with 10 camels for the Cape Government on board (Cape Town Archives Repository, Source AGR, Volume 445, Reference 3052). Ten was the number considered by Professor R Koch (telegram Koch to Agricola, 5 February 1897, Cape Town Archives Repository, Source AGR, Volume 445, Reference 3052) as necessary for 'experimental purposes in connection with the rinderpest' epidemic.

The administration in Rhodesia (Zimbabwe) also considered camels as an alternative to oxen. The country was rather behind the Cape Colony in its ideas, however, as the first camels introduced there did not arrive until 1903. These were from Karachi, India (now Pakistan) and comprised bulls and cows of the 'baggager' Gujarkhan breed and bulls, cows and a heifer of the riding Batinda breed. Following sea transport to Beira, Portuguese East Africa (Mozambique), the overland journey was accomplished without mishap, the animals arriving in Salisbury (Harare) on 9 May 1903<sup>8</sup>.

Following the failure of an agreement between Transvaal and the Cape Colony for the former to obtain camels from the latter, Transvaal imported camels direct from Somaliland (*i.e.* the British colony in

the northwest of what is now Somalia) in 1904<sup>18,19</sup>.

There were no imports to British Bechuanaland Protectorate (Botswana) at this early stage, but camels traversed the territory in use as police and postal animals by the Cape Colony authorities. Following the first introductions into German South West Africa and the Cape Colony, further lots were imported over the succeeding years.

This paper provides information on perceived and actual problems of disease in camels in the southern African region in the early years of their introduction to the region.

### MATERIALS AND METHODS

Material for this paper arises from a review of the literature. The records are from formally published sources and material in the national archival repositories of southern African countries.

### RESULTS

#### Rinderpest

By the time the 10 camels arrived at Cape Town on 27 March 1897 – only 7 weeks after the illustrious Professor Koch had insisted that this number was needed for experimentation – the reason for their import had become redundant. This was due to the 'success which had attended the investigations at Kimberley (having) rendered their use as contemplated for experimental purposes in connection with Rinderpest unnecessary' (unattributed and undated typescript probably early February 1899, Cape Town Archives Repository, Source AGR, Volume 445, Reference 3052). Two of the ten arrivals were nonetheless sent to Kimberley where they arrived at the Experimental Station 'in good order and condition' on 8 April 1897 (handwritten note, J W Phillips, Cape Town Archives Repository, Source AGR, Volume 445, Reference 3052). They were inoculated with 'virulent rinderpest blood but without success – the animals proving to be immune to this disease' (unattributed and undated typescript probably early February 1899, Cape Town Archives Repository, Source AGR,

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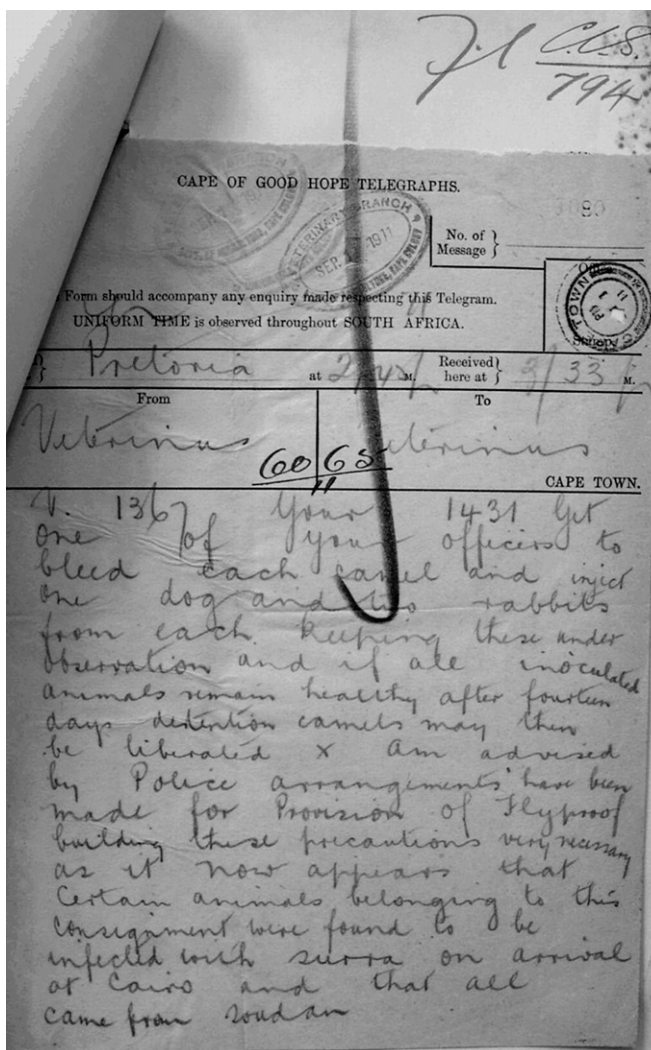
Volume 445, Reference 3052). Neither animal in fact suffered any ill effects whatsoever (telegram Turner to Agricola, 28 April 1897, Cape Town Archives Repository, Source AGR, Volume 445, Reference 3052). There are no further references to rinderpest and camels in the Cape.

### Foot-and-mouth disease

The first reference in the public domain (as opposed to internal government correspondence) to camel diseases in Rhodesia (now Zimbabwe) appeared in the first issue of the *Rhodesia Agricultural Journal*<sup>2</sup>. The editorial tended to the view that camels were not susceptible to the common diseases of traditional domestic livestock. A second reference is to foot-and-mouth disease (FMD) from which one imported camel purportedly died: 'the splendid record achieved by our first batch of camels has at last been interrupted by an outbreak of Foot and Mouth Disease at the camel camp, Goromonzi'<sup>4</sup>. A *post mortem* examination concluded that 'from the foregoing conditions I [Government Veterinary Officer Bruce] have no hesitation in saying that the animal suffered from FMD'. In another attribution Bruce opined 'that the camel is suffering from a form of stomatitis and not foot and mouth disease' with a probable bacterial cause, although the cause may have been due to eating some plant irritating to the mucous membranes (letter Department of Agriculture 7 December 1903: Cape Town Archives Repository, Source AGR, Volume 445, Reference 3053)). One month after it was affected, the animal was on the high road to recovery and no other animals had suffered the same disease.

The published record may have been misleading but there was also confusion within the administration itself. Official records indicate 3 camels had died 'from a disease resembling but not identical to foot and mouth disease and some of the affected animals have recovered' (telegrams, Salisbury Resident Commissioner to Johannesburg High Commissioner, 16 and 19 December 1903: Cape Town Archives Repository, Source CVS, Volume 1.83, Reference 79). Shortly afterwards the diagnosis became firm: the cause of death was definitely 'identical to foot and mouth disease'. In all these communications it was 'desirable that the report should not be published until a thorough investigation has been made into the causes and nature of the disease in question' (Cape Town Archives Repository, Source AGR, Volume 445, Reference 3053). After another death the veterinary surgeon (Bruce) was convinced that it was indeed FMD (letter, Salisbury to

Fig. 1: Telegram from Union veterinary surgeon to Cape veterinary surgeon with instructions for testing imported camels for presence of trypanosomiasis.



Johannesburg, 13 January 1904). A quarantine imposed by Government Notice No. 17, 1904 under the Animal Diseases Ordinance 1901 was rescinded by Government Notice No. 114 of 12 May 1904 and movement of animals in the defined area was again allowed.

### Trypanosomiasis

The Veterinary Branch of the Cape Department of Agriculture was greatly concerned by the possibility of 'surra' (camel trypanosomiasis due to *Trypanosoma evansi*) being brought into South Africa from Egypt (telegram to counterpart in Egypt 7 July 1911: Cape Town Archives Repository, Source CVS, Volume 1.83, Reference 79: Source AGR, Volume 445, Reference 3053). The Egyptian authorities indicated that as far as was known 'surra' did not exist in Egypt proper but was believed to exist in Sudan in the vicinity of Khartoum'. They went on to advise that if the precise origins of the camels were determined it could be decided whether experimental inoculations were necessary. The Acting Assistant Principal Veterinary

Surgeon (Cape) wrote to the Acting Principal Veterinary Surgeon (Union of South Africa) on 10 August 1911 that in view of the discovery of trypanosomiasis in 1 and of filariasis in another of the camels to be imported from Egypt (letter, High Commission London to Acting Under Secretary for Agriculture, 21 July 1911: Cape Town Archives Repository, Source AGR, Volume 591, Reference R66) it was recommended that the camels be sent to Pretoria for supervision by the Acting Director of Veterinary Research until he was satisfied as to their condition and health. Pretoria replied by cable (14 August) that on arrival in Cape Town the camels should be quarantined in fly-proof accommodation until the necessary tests could be carried out to prove them free of disease. Suitable accommodation being found, the Cape Veterinary Surgeon requested of Pretoria what was to be done about the experimental inoculations to which he received a detailed telegraphic response (Fig. 1). The camels were eventually released from quarantine on 21 September 1911.

'Surra' was imported into Transvaal in camels that arrived from Somaliland in 1904<sup>18,19</sup>. Trypanosomosis was also imported to German South West Africa in 1905 or possibly 1906<sup>14</sup>. In 1910 *Trypanosoma soudanense* – a trypanome specific to camels – was confirmed in animals belonging to the Schutztruppe<sup>16</sup>. *Tevansi* had initially been suspected and the Territory's chief veterinarian had ordered the slaughter of all 800 of the Schutztruppe camels. The military refused to do this as they had been aware of the disease since 1906 but had not seen any mortality in other animals. Further investigation showed that all parasite-positive animals, mostly at the camel depots of Gochas and Kalkfontein North (Stampriet), originated from North Africa, whereas none from the Canary Islands was positive. The infected animals were treated and restrictions placed on further imports from India, Mauritius, Angola and Northern Rhodesia (Zambia). No further outbreaks being reported, the import restrictions were lifted in 1914.

#### Other vector-borne diseases

Resistance to disease was a major – but not the only – factor in the decision to import camels into Rhodesia in 1903. Logic behind the use of camels was twofold. First, they were considered non-susceptible to such diseases as rinderpest (which had by then largely run its course), redwater and African horse sickness (AHS)<sup>28</sup>. Second, they were harder than oxen, required less water and went well in buggies, carriages and ambulances at a steady 6 miles per hour (9.7 kph). The original camels were to 'be put to transport work, carrying in grain from the out-lying districts where bullock transport is not permitted under the Redwater regulations'<sup>3</sup>. The reference to AHS is interesting as it indicates that camels were to substitute for horses. AHS was a problem at lower altitudes and during wet months<sup>5</sup>.

Camels came late to Rhodesia because attempts to replace cattle losses were first made by importing other cattle – by sea through Beira and overland through Northern Rhodesia (Zambia) from German East Africa (Tanzania) in 1901. These imports were almost certainly responsible for introducing East Coast fever (ECF) to southern Africa<sup>10,11,17</sup>. A shipload of Australian cattle imported in 1902 was definitely infected with ECF which may have been picked up from ticks during the overland journey from Beira. ECF resulted in further heavy losses of oxen, whose numbers had hardly recovered from the effects of rinderpest. When some Rhodesian camels were re-exported to the Cape towards the end of 1904 the

latter's Chief Veterinary Surgeon did not 'consider that there is any danger of these camels carrying African East Coast fever but (...) suggest these precautions for the satisfaction of the public' including that the animals must in any case be free of ticks (hand written draft memorandum CVS to Under Secretary for Agriculture, 11 November 1904 subsequently typewritten and signed by the Under Secretary: Cape Town Archives Repository, Source AGR, Volume 445, Reference 3053).

Tick-borne diseases and AHS were the 'emerging diseases' of the early twentieth century in southern Africa. Just as there was a high profile veterinary scientist in the English-speaking Cape there was also one in the Afrikaans speaking areas. Arnold Theiler was officially sworn in as State Veterinarian of the Zuid Afrikaanse Republiek (corresponding to what became Transvaal) on 11 May 1896 and was thus contemporaneous with Koch. Amongst his interests were AHS (still a problem in South Africa in spite of vaccination, with 850 cases in November 2005 to May 2006 and 160 in November 2006 to June 2007<sup>1</sup>), tick-borne diseases, nagana (sleeping sickness in cattle), equine malaria (now equine piroplasmiasis) and phosphate deficiency. He is remembered internationally for work on ECF, the causal agent of which, *Theileria parva*, bears his name and for his research on lamsiekte (botulism). As these new fields developed a research station was built at Onderstepoort to the north of Pretoria<sup>6</sup>. This facility is still the main government veterinary research centre in southern Africa. Paradoxically, although the immediate effects of rinderpest and ECF – which both Koch and Theiler originally considered a virulent form of redwater – were devastating, the long-term benefits are immeasurable in that veterinarians were able to prove the need for organised research.

#### Mange

The Indian camels imported to Rhodesia were infected with mange. This prompted the Secretary of the Cape Law Department to write to the Attorney General (with respect to imports from Rhodesia in 1904 for the Cape Mounted Police) that camels should be obtained from the same sources – the Canary Islands or Egypt – as earlier imports (Cape Town Archives Repository, Source CO 8237, Reference X30). The Government Veterinary Surgeon in Bulawayo (Southern Rhodesia) certified the animals as sound and healthy (memorandum, C R Edmonds MRCVS, 15 December 1904). The Cape officer receiving the animals had, however, a different

opinion. He found them in very poor condition which he attributed to their being tied down for 5 days without food or water (letter, Sub-Inspector to Officer Commanding 'S' Division Cape Mounted Police, 10 January 1905: Cape Town Archives Repository, Source CO 8237, Reference X30). It is possible that a contributory factor was mange. Some Cape camels were already suffering from mange which it was thought had been picked up from blankets and saddlery (memorandum, Department of Agriculture, 7 December 1903: Cape Town Archives Repository, Source AGR, Volume 445, Reference 3053). A seemingly encouraging addendum was that this could easily be cured.

Camel mange was already a global problem in the late 19th century. The first large scale import of camels to Australia was made by Sir Thomas Elder. These arrived from Karachi in 1866 together with 31 'Afghan' handlers. Of the 121 imported, 59 died of mange. The remainder formed the basis of Australian breeding stock. By 1895 there were probably 6000 camels in the country, mainly in the Western Australian goldfields<sup>13</sup>.

#### Other diseases

A Cape Agriculture Department camel died of liver cirrhosis and dropsy. The dropsy was predisposed by pregnancy and age (memorandum, Department of Agriculture, 7 December 1903: Cape Town Archives Repository, Source AGR, Volume 445, Reference 3053). One animal used by the Post Office succumbed to pneumonia and Police camels died of snake bite, lung disease (pneumonia) and a 'bowel complaint due to overfeeding of oats when famished' (Cape Town Archives Repository, Source AGR, Volume 591, Reference R66).

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