AN OUTBREAK OF SOUTH AFRICAN HORSE-SICKNESS IN SOUTHERN ARABIA.

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In the autumn of 1906 an epidemic disease of equines appeared suddenly in the Aden Hinterland and gradually spread down to Aden. This disease proved to be South African horse-sickness.

The outbreak was first observed among some transport mules at D'thala, which is situated about 70 miles due north of Aden. On September 10th a mule, while at work, suddenly fell ill and died within a few hours, "frothing" at the nostrils after death. A second mule died on September 14th in an exactly similar manner. Between September 10th and November 7th, 16 mules died, or were shot when their condition appeared to be absolutely hopeless; 19 mules were sick of the disease, of which 8 appeared to be recovered. On September 28th the ponies of the Aden Troop in D'thala were attacked, and up to November 7th, 10 died, or were shot in extremis; 6 appeared to be recovered and 5 were sick. In addition, 3 officers' ponies were shot in extremis and 1 was sick on November 7th. One Conductor's pony appeared to be recovering. A pony belonging to the food contractor had died, and 2 out of 4 ponies belonging to the Amir of D'thala had died. I saw almost all these animals myself, and performed, or was present at, 9 post-mortem examinations. All presented the lesions of South African horse-sickness.

The Arabs in the vicinity of D'thala gave very conflicting accounts; but it appears to be fairly certain that about seven to ten days before the outbreak of the disease at D'thala, 2 horses and 1 mule died suddenly of a very similar disease at a place on the Turkish border about 10 miles from D'thala. It seems probable, therefore, that the infection came to D'thala from the north, by way of Turkish Arabia.

At about the end of October this disease appeared at Lakej, which is situated about half-way between D'thala and Aden. It is impossible to state the exact date of the outbreak at Lakej. On October 20th Major Smith, D.S.O., A.V.C., passed through Lakej and reported that no horses were sick in that place. On November 9th the Sultan of Lakej wrote that "38 horses had died within the last few days." On November 29th an Indian salutry
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visited Lakej and reported that 10 horses in the Sultan's stables were sick, and that about 50 horses had died in the Lakej district.

Somewhere about the end of October the disease appeared in Shaikh Othman, 9 miles from Aden. In October 3 horses died in this place, but the cause of their death was not accurately ascertained. From November 1st to December 7th, 19 horses died in Shaikh Othman, and 1 horse was then sick.

In Khormaksar, about 3 miles from Shaikh Othman, 1 horse died in October and 4 in November.

In the Crater Aden 5 horses died in October; from November 1st to December 7th, 10 horses died, 2 were shot in extremis, and 2 remained sick. I saw several of the sick animals in the Crater and 1 post-mortem examination; they presented exactly the same conditions as were present in the diseased animals at D'thala.

By the kindness of Colonel Bruce, R.A.M.C., I was enabled to compare Dr. Watkins-Pitchford's description of the morbid anatomy of this disease as observed in Natal. I found all the morbid conditions described by Dr. Watkins-Pitchford, save the changes in the marrow of the femur, which I was unable to see, owing to lack of instruments. The blood of some of the diseased animals was examined microscopically by Major Smith, the Parel Laboratory, Bombay, and myself, with negative results in every case. Cultures and inoculation into a mouse and a guinea-pig, with some blood obtained by me from diseased animals, were made at the Parel Laboratory, Bombay, with negative results. Major Smith had previously seen this disease in South Africa and had no hesitation in identifying it. The acute pulmonary form of the disease was relatively infrequent, but I was able to obtain a photograph of a mule after death showing the characteristic froth at the nostrils. This photograph is similar to the one reproduced in the Journal of the Royal Army Medical Corps, vol. vii., September, 1906, p. 241.

A considerable amount of evidence has been brought forward to show that this disease is probably carried by Anopheles mosquitoes. It is curious that this disease appeared in D'thala at the height of the mosquito and fever season, and commenced in Shaikh Othman and Khormaksar shortly after the beginning of the mosquito and fever season in these places. In D'thala, Anopheles mosquitoes appeared on August 5th, 1906, and increased steadily in numbers up to the end of September, gradually diminishing in numbers after that date, until, when I left D'thala on November 7th, only one or two Anopheles could be found. In Shaikh
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Othman and Khormaksar, Anopheles usually appear in October (Captain W. S. Patton, I.M.S.), and when I arrived at Shaikh Othman on November 24th, Anopheles mosquitoes abounded there. If the infection be conveyed by an Anopheles mosquito it must be carried by the Anopheles arabiensis (Patton), since this is the only species which is numerous in all the places where the disease appeared. Unfortunately, an experiment of isolating 2 mules in mosquito netting proved abortive owing to lack of supervision.

I had some difficulty at first in understanding how the disease was conveyed from D’thala to Lakej, as the Arabs possess extremely few horses and mules, and none were permitted to leave D’thala. However, I found that a couple of donkeys died near D’thala during October, and it is known that donkeys can suffer from South African horse-sickness in a mild form. Now donkeys are very common beasts of burden in this part of Arabia, and were continually going from D’thala to Lakej and Shaikh Othman. I think, therefore, that the infection was probably carried by donkeys from D’thala to Lakej and Shaikh Othman.

In conclusion, I wish to thank A. S. Meek, Esq., Transport Officer at D’thala, Major Jacob, Political Agent at D’tala, and Captain Hancock, first Assistant Resident at Aden, for the information they kindly placed at my disposal.