

# REPORT

OF THE

## GOVERNMENT VETERINARY BACTERIOLOGIST.

Division of Veterinary Science,  
Pretoria, 13th January, 1908.

TO THE DIRECTOR OF AGRICULTURE.

SIR,

I have the honour to submit the annual report of the Government Veterinary Bacteriological Division for the financial year ending the 30th June, 1907, and again take the opportunity of briefly commenting on the various articles comprising my investigations during the year, pointing out the achievements and the further points to be elucidated.

(A) FURTHER NOTES ON *PIROPLASMA MUTANS* (N. spec.)

In my last report I described *piroplasma mutans* (N. spec.), a piroplasm which in former years was identified with *piroplasma bigeminum* of the immune ox, and a series of experiments were adduced in support of my new conception which I considered sufficient to demonstrate the duality of *piroplasma mutans* and *piroplasma bigeminum*. The results of my investigations in 1905-1906 shewed that a successful infection with *piroplasma mutans* was possible at any period after a pure infection of *piroplasma bigeminum*, and it was chiefly this fact which convinced me that *piroplasma bigeminum* and *piroplasma mutans* were two distinct species. This year a similar experiment was undertaken, but the length of time between the two infections was sufficient to exclude any possibility whatever of a retarded appearance of *piroplasma mutans*. For this purpose calves immune against redwater, but not against *piroplasma mutans*, were utilised; this fact was ascertained experimentally, in as much as I observed that an inoculation of blood into susceptible cattle was followed by the exclusive appearance of *piroplasma bigeminum*; susceptible cattle were, therefore, rendered immune against *piroplasma bigeminum* by injecting them with blood taken from a case of pure redwater infection. After an interval, ranging from 25 to 106 days, a second inoculation was made with blood containing *piroplasma mutans*. In every instance after the typical incubation time this latter parasite made its appearance. Continuing with my endeavours to prove beyond doubt that *piroplasma bigeminum* and *piroplasma mutans* are two distinct species, experiments were conducted with ticks. *Piroplasma bigeminum* is carried by blue larval ticks—the offspring of blue adult females which have been sucking blood on an immune or sick animal—and it follows that if the two piroplasms are in any way connected, the blue tick would likewise transmit *piroplasma mutans*; but another possibility arises that the two parasites may be of different species, and yet be carried by the same tick. Therefore, if an infestation with infected blue larval ticks be followed by the exclusive appearance of *piroplasma bigeminum*, and, at a later period it is possible to transmit *piroplasma mutans* by means of a blood inoculation to the same cattle, the result would be of considerable value in support of my conception.

Six heifers, all derived from Aliwal North, a district free of redwater, and therefore susceptible to this disease, were infested with numerous blue larval ticks, previously feeding on animals which contained both piroplasms in their blood. In all six cases the infestation of ticks was succeeded by the