

EXPERIMENT II.

Drenching with Bone Material forwarded by Mr. S., Willow Grange.—Some bones were collected in a camp where lamsiekte was said to be unknown, and some from a camp where the disease was suspected to exist.

On the 21st and 27th February, 1920, three heifers were drenched with the above material, each receiving a dose varying from 380 to 480 grammes.

Result: This was negative in all cases.

EXPERIMENT III.

Drenching with Bone Material forwarded by Mr. B., Willow Grange.—Lamsiekte had been reported from this farm and pica was shown by the cattle. During the period from 12th February to 5th March, 1920, five animals were drenched with the above, the quantity used per animal varying from 300 to 480 grammes.

Result: Negative in all cases.

EXPERIMENT IV.

Drenching with Bone Material supplied by Mr. M., v.d. Merwe's Kraal.—On this farm the existence of lamsiekte was suspected. One heifer was drenched on the 28th January, 1920, with 135 grammes of the above material.

Result: Negative.

EXPERIMENT V.

Drenching with Bone Material forwarded by Mr. R., Estcourt.—This farm is situated in the suspected lamsiekte area. On the 28th January, 1920, one animal was drenched with 230 grammes of the above material.

Result: The animal developed symptoms of an illness which in the later stages somewhat resembled lamsiekte. A definite diagnosis of this disease could, however, not be made.

EXPERIMENT VI.

Drenching with Material forwarded by Mr. R., Dargle Road.—On this farm no suspicion of lamsiekte existed and no signs of pica were shown by the cattle.

Putrid bones were used for drenching two cattle, one receiving 435 grammes on the 12th February, and the other 480 grammes on the 28th January.

Result: This was negative in both cases.

EXPERIMENT VII.

Drenching with Bone Material forwarded by Mr. M., Lidgeton.—On this farm lamsiekte had not been suspected, but craving for bones was present. On the 15th March, 1920, one heifer received per os 480 grammes of the above material.

Result: Negative.

DISCUSSION OF RESULTS.

- (1) Fifteen animals were drenched with putrid carcass material obtained from seven different farms in Natal, on some of which lamsiekte had been suspected to exist, while on others the disease had never been suspected. Craving for bones was very marked on some farms, but completely

absent from others, but it must be stated that pica was present on all those farms on which the owners suspected the existence of lamsiekte.

- (2) With the exception of one case (animal 4085) all the drenching experiments gave completely negative results. No. 4085 died of toxæmia, but the symptoms were not typical of a case of lamsiekte.
- (3) The results of these experiments would tend to show that at the time when the material was collected the lamsiekte toxin was not being developed in the carcasses of the suspected lamsiekte farms. It must be pointed out, however, that no natural cases of the disease were occurring on the farms in question during that period, so that possibly the conditions favourable for the development of the toxin might not have been present then, just as was the case at Onderstepoort at the beginning of our experiments.

SUMMARY AND CONCLUSIONS.

1. These experiments were carried out in a locality where the disease lamsiekte in cattle is quite unknown. Additional precautions were taken to exclude the possibility of natural cases of the disease occurring in the experimental animals by (a) using only cattle from a known non-lamsiekte area; and (b) stabling these animals prior to and during the course of the experiments.

2. When the first positive results were obtained from the drenching experiments with putrid animal matter in the lamsiekte area, it was not known with certainty that the disease so produced was of a specific nature and that decomposing animal matter in other parts of the country did not contain toxic substances that might set up a somewhat similar disease. This point could only be settled by carefully conducted experiments in a non-lamsiekte area.

Quite early in the course of the experiments described here definite evidence was forthcoming to show that the ordinary decomposition of carcasses was not productive of any well-marked toxic substances, and that, as a matter of fact, putrid material, no matter in what stage of decomposition, even in large quantities, could be administered per os to cattle without producing any ill effects. During the period between 15th February and 7th December, 1919, a large number of cattle were used in such drenching experiments and in not a single case could symptoms of any disease be set up.

3. In order to show that the putrid toxic material itself and no other factors were responsible for the causation of lamsiekte, toxic material was sent from the lamsiekte area to Onderstepoort for drenching experiments. With the use of this material typical cases of lamsiekte were produced, and this during the period referred to above, when local carcass material was certainly not toxic.

4. The result of these experiments, therefore, provided definite evidence to show that toxic substances of a very specific nature were responsible for lamsiekte and that the production of these toxins appeared to be limited to certain areas.

As will be seen elsewhere in this report, as also in Series D of the experiments under discussion, there is no doubt that the toxins are produced by specific organisms which multiply in decomposing animal matter.

5. From 8th December, 1919, onwards, toxic substances seemed to be developing in most carcasses at Onderstepoort. Unfortunately it was not possible to continue the experiments sufficiently long to find out whether toxin production would go on for any length of time or whether it is determined by special climatic, soil, or other factors. As mentioned elsewhere, it is not clear whether the organism responsible for toxin production is normally present in these parts or whether it was introduced with the infected toxic material from the lamsiekte area. We are inclined to favour the former view, namely, that the organism is widely distributed, but that its multiplication in animal carcasses, with resulting toxin production, is dependent on, or influenced by, a number of extraneous circumstances. To determine these, further experimental study, not only of the casual organisms themselves, but also of the bacterial flora commonly connected with the decomposition of animal matter, is called for.

6. This view concerning the distribution of the organisms and toxin production is given further support by the results of the drenching experiments discussed under Series E. Here carcass material was obtained from farms where the occurrence of lamsiekte was strongly suspected, and yet the drenching experiments gave negative results. The explanation is that the conditions favourable for the multiplication of the specific organism, and of toxin production, most probably were absent when the material was collected. In support of this it may be stated that natural cases of the disease in cattle were also not occurring at that time.

Moreover, on farms where lamsiekte is very prevalent, it is well known that at certain times no toxin production can be demonstrated in decomposing animal carcasses.

SECTION 3.—APPENDIX.—DETAILS OF EXPERIMENTS.

SERIES A.

EXPERIMENT I.—DRENCHING OF CATTLE WITH PYCNOSOMA LARVAE REARED ON CARCASSES OF CATTLE.

1. HEIFER 4212.—Arrived at Onderstepoort on 24.5.18 from Pretoria and stabled since 26.7.18.

Treatment: Drenched on 15.2.19 with 200 grammes of pycnosoma larvae (two days old) that had been reared on carcasses of cattle at Onderstepoort.

Result: Death resulted from black quarter, four days after drenching.

2. HEIFER 4017.—Born at Onderstepoort on 3.9.17 from cow 3727 and stabled since 18.2.19.

Treatment: Drenched on 18.2.19 with 150 grammes of pycnosoma larvae (nearly mature) that had been reared on carcasses of cattle at Onderstepoort.

Result: Negative.

3. Ox 3687.—Arrived at Onderstepoort on 20.3.16 from Pretoria and stabled since 19.2.19.

Treatment: Drenched on 20.2.19 with 200 grammes of pycnosoma larvae (mostly mature) that had been reared on carcasses of cattle at Onderstepoort.

Result: Negative.

4. HEIFER 4021.—Born at Onderstepoort on 9.9.17 from cow 3726 and stabled since 19.2.19.

Treatment: Drenched on 20.2.19 with 150 grammes of pycnosoma larvae (mostly mature) that had been reared on carcasses of cattle at Onderstepoort.

Result: Negative.

5. HEIFER 4061.—Born at Onderstepoort on 12.11.17 from cow 3964 and stabled since 19.2.19.

Treatment: Drenched on 20.2.19 with 100 grammes of pycnosoma larvae (mostly mature) that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

6. HEIFER 4008.—Born at Onderstepoort on 19.8.17 from cow 3725 and stabled since 19.2.19.

Treatment: Drenched on 20.2.19 with 50 grammes of pycnosoma larvae (mostly mature) that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

7. BULL 4081.—Born at Onderstepoort on 8.1.18 from cow 3730 and stabled since 19.2.19.

Treatment: Drenched on 20.2.19 with 25 grammes of pycnosoma larvae (mostly mature) that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

8. HEIFER 4692.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 25.9.19.

Treatment: Drenched on 6.11.19 with 480 grammes of pycnosoma larvae that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

9. HEIFER 4764.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 26.6.19.

Treatment: Drenched on 6.11.19 with 480 grammes of pycnosoma larvae that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

10. HEIFER 4573.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 25.10.19.

Treatment: Drenched on 11.11.19 with 480 grammes of pycnosoma larvae that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

11. HEIFER 4680.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 25.10.19.

Treatment.—Drenched on 11.11.19 with 480 grammes of pycnosoma larvae that had been reared on carcasses of cattle at Onderstepoort.
Result: Negative.

12. HEIFER 2696.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 30.4.19.

Treatment: Drenched daily on the 1st, 2nd, and 3rd of May, 1919, with 240 grammes of pycnosoma larvae that had been reared on carcasses of cattle at Onderstepoort.

Result: Negative.

13. HEIFER 4064.—Born at Onderstepoort on 18.11.17 from cow 3744, on farm up to 5.12.19, and stabled since then.

Treatment: Drenched on 8.12.19 with 480 grammes of pycnosoma larvae that had been reared on the carcass of cow 4655 which died at Onderstepoort on 4.12.19 from causes other than lamsiekte.

Result: In the forenoon of 11.12.19 it was found to be lying down in the sternal position, but unable to rise to its feet. It had a staring coat, its breathing was accelerated, and the eyes had a sunken-in appearance.

At 2 p.m. of the same day it was much worse, lying stretched out on its side, kicking and groaning a good deal, breathing accelerated, and a watery discharge was running from its eyes and nostrils. It died suddenly at 2.45 p.m.

Epicrisis: The symptoms were those of a very acute attack of lamsiekte, which ran a very rapid and fatal course.

14. HEIFER 4584.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 5.12.19.

Treatment: Drenched on 8.12.19 with 480 grammes of pycnosoma larvae that had been reared on the carcass of cow 4655 which died at Onderstepoort on 4.12.19.

Result: On the morning of the 15th December the animal was found lying down normally in the sternal position, but unable to rise to its feet.

The next day it was still alive, but lying stretched out in a helpless condition on its side.

On the morning of the 17th it was found dead.

Epicrisis: Symptoms of lamsiekte appeared after an incubation period of seven days, and the illness lasted only two days. Its temperature remained normal during the course of the disease, but in the afternoon of the 16th dropped to sub-normal—95°.

15. BULL 4085.—Born at Onderstepoort on 22.1.18 from cow 3961 and stabled since 19.2.19.

Treatment: Drenched on 15.12.19 with 400 grammes putrid meat obtained from the carcass of heifer 4064 which died on 11.12.19 as the result of drenching with pycnosoma larvae obtained from cow 4655.

Result: Negative.

EXPERIMENT II.—DRENCHING OF CATTLE WITH PYCNOSOMA PUPAE HATCHED OUT IN CARCASSES OF CATTLE.

BULL 4085.—Born at Onderstepoort on 22.1.18 from cow 3961, on farm up to 19.2.19, and stabled since 19.2.19.

Treatment: Drenched on 25.2.19 with 70 grammes of pycnosoma pupae (mostly empty shells) and again on 6.3.19 with 30 grammes (empty shells and live flies) that had been reared on carcasses of cattle at Onderstepoort.

Result: Negative.

EXPERIMENT III.—DRENCHING OF CATTLE WITH PYCNOSOMA LARVAE REARED ON CARCASSES OF HORSES.

1. HEIFER 4287.—Arrived at Onderstepoort on the 28.5.18 from Pretoria and stabled since 26.7.18.

Treatment: Drenched on the 15.2.19 with 200 grammes of pycnosoma larvae (about two days old) and again on the 25.2.19 with 100 grammes of fly larvae (mature) that had been reared on carcasses of horses at Onderstepoort.

Result: Negative.

2. BULL 3628.—Born at Onderstepoort on the 23.8.15 from cow 2682 and stabled since 8.2.19.

Treatment: Drenched on the 12.2.19 with 200 grammes pycnosoma larvae (nearly mature) and again on the 6.3.19 with 200 grammes pycnosoma larvae (mature and a few pupae) that had been reared on carcasses of horses at Onderstepoort.

Result: Negative.

3. HEIFER 4064.—Born at Onderstepoort on the 18.11.17 from cow 3744 and stabled since 5.3.19.

Treatment: Drenched on the 11.3.19 with 170 grammes pycnosoma larvae (full-grown) that had been reared on carcasses of horses at Onderstepoort.

Result: Negative.

4. HEIFER 4698.—Arrived at Onderstepoort on the 29.3.19 from Pretoria and stabled since 5.12.19.

Treatment: Drenched on the 15.12.19 with 480 grammes pycnosoma larvae collected on the carcass of horse 13417, which died on the 13.12.19 as the result of internal hæmorrhage.

Result: Negative.

5. HEIFER 4428.—Born at Onderstepoort on the 1.11.18 from cow 3403, in West Camp up to 19.2.19, and stabled since that date.

Treatment: Drenched on the 22.12.19 with 480 grammes pycnosoma larvae that had been reared on carcasses of horses at Onderstepoort.

Result: On the morning of the 26th December the animal was found lying down and unable to rise. During the day symptoms of paralysis of the jaw muscles developed as indicated by constant movement of the jaws and dribbling of saliva.

The next morning the animal was found dead.

Epicrisis: The animal died from acute lamsiekte after only one day's visible illness.

No rise in temperature was ever detected.

6. HEIFER 4560.—Born at Onderstepoort on the 27.1.19 from cow 3754 and stabled since 1.3.19.

Treatment: Drenched on the 24.12.19 with 480 grammes pycnosoma larvae that had been reared on carcass of horse 12396, which died at Onderstepoort on the 22.12.19 from liver atrophy.

Result: The animal was found dead on the morning of the 27th December.

Epicrisis: The cause of death was undoubtedly a form of peracute lamsiekte. Microscopic examination of blood-smears proved to be negative, and post-mortem examination revealed lamsiekte.

7. HEIFER 4703.—Arrived at Onderstepoort on the 9.4.19 from Pretoria and stabled since 25.10.19.

Treatment: Drenched on the 16.1.20 with 480 grammes pycnosoma larvae that had been reared on the carcass of horse 13378, which died at Onderstepoort on the 12.1.20 from intestinal torsion.

NOTE.—This carcass was not placed in the same paddock as the others. A special wire-netting enclosure was constructed about half a mile away from the other carcass camp, the object being to avoid infection being carried from the carcasses which had been proved to be toxic.

Result: At 9 a.m. on the 19th January definite symptoms of lamsiekte could be detected, the animal showing a stiff gait, lying down frequently, etc. Symptoms of muscular weakness gradually increased until the next morning, when the animal was found lying down in a helpless condition. It died at noon on the same day.

Epicrisis: The animal showed symptoms of lamsiekte after an incubation period of only three days, and died the second day after visible symptoms were noticed.

EXPERIMENT IV.—DRENCHING OF CATTLE WITH PYCNOSOMA LARVAE OBTAINED FROM CARCASSES WHICH HAD BEEN CAREFULLY KEPT AWAY FROM THE ORDINARY SOURCES OF INFECTION.

1. HEIFER 4706.—Arrived at Onderstepoort on the 29.3.19 from Pretoria and stabled since 25.10.19.

Treatment: Drenched on the 13.2.20 with 480 grammes of pycnosoma larvae that had been reared on the carcass of horse 27, which had died at Onderstepoort on the 9.2.20 from experimental horse-sickness.

Result: On the morning of the 16th the animal was found to be lying down most of the time and to have some difficulty in getting up. Signs of paralysis of the jaw and tongue muscles, as indicated by the mouth hanging partly open, the tongue slightly protruding, and constant dribbling of saliva, developed the same day.

The condition of the animal got rapidly worse, and death supervened the same night.

Epicrisis: After an incubation period of only three days, symptoms of lamsiekte appeared, and the animal died from a very acute form of the disease after only one day's visible illness.

2. HEIFER 4387.—Born at Onderstepoort on the 9.9.18 from cow 3755 and stabled since 18.12.19.

Treatment: Drenched on the 13.2.20 with 480 grammes pycnosoma larvae that had been reared on the carcass of horse 27, which had died at Onderstepoort on the 9.2.20 from experimental horse-sickness.

Result: The animal was apparently in normal health on the 15th, but on the morning of the 16th it was found dead in the stable.

Epicrisis: After an incubation period of only three days the animal died suddenly from peracute lamsiekte as indicated by the history and the post-mortem findings.

Microscopic examination of blood-smears revealed no abnormality.

EXPERIMENT V.—DRENCHING OF A HORSE WITH FLY LARVAE REARED ON CARCASSES OF CATTLE.

HORSE 12465.—Arrived at Onderstepoort on the 12.2.19 from Pretoria and stabled since 13.2.19.

Treatment: Drenched on the 20.2.19 with 200 grammes fly larvae (mostly mature) that had been reared on carcasses of cattle that died at Onderstepoort of diseases other than lamsiekte.

Result: Negative.

Remarks: The quantity of larvae given was rather small, and moreover, during the same period apparently no toxic substances developed in carcasses at Onderstepoort.

EXPERIMENT VI.—DRENCHING OF GOATS WITH FLY LARVAE REARED ON CARCASSES OF HORSES, GOATS, AND DOGS.

1. GOAT 10924.—Arrived at Onderstepoort on the 13.11.16 from Pretoria and stabled since then.

Treatment: Drenched on the 6.3.19 with 50 grammes pycnosoma larvae (mostly mature, but a few pupae) reared on the carcass of a horse that had died at Onderstepoort.

Result: Negative.

2. GOAT 11431.—Arrived at Onderstepoort on the 26.1.17 from Pretoria and stabled since then.

Treatment: Drenched on the 6.3.19 with 25 grammes pycnosoma larvae (mostly mature, but a few pupae) reared on the carcass of a horse that had died at Onderstepoort.

Result: Negative.

3. GOAT 10944.—Arrived at Onderstepoort on the 20.11.16 from Pretoria and stabled since then.

Treatment: Drenched on the 13.3.19 with 100 grammes pycnosoma larvae (mostly mature, but a few pupae) reared on the carcasses of a goat that had died at Onderstepoort.

Result: Negative.

4. GOAT 11432.—Arrived at Onderstepoort on the 26.1.17 from Pretoria and stabled since arrival.

Treatment: Drenched on the 13.3.19 with 150 grammes pycnosoma (mostly mature, but a few pupae) reared on the carcass of a dog that had died at Onderstepoort.

Result: Negative.

EXPERIMENT VII.—DRENCHING OF CATTLE WITH PUTRID BONES OBTAINED FROM CARCASSES OF VARIOUS ANIMALS.

1. HEIFER 4569.—Arrived at Onderstepoort on the 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 27.3.19 with 250 grammes of finely-crushed ribs that had been obtained from the carcass of heifer 3831, which was killed for experimental purposes on 12.2.19.

Result: Negative.

2. HEIFER 4570.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 17.3.19.

Treatment: Drenched on 27.3.19 with 300 grammes of finely-crushed ribs that had been obtained from the carcass of heifer 3831, which was killed on 12.2.19 for experimental purposes.

Result: Negative.

3. HEIFER 4573.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 27.3.19 with 300 grammes finely-crushed vertebrae that had been obtained from the carcass of tollie 4469 that died of causes other than lamsiekte.

Result: Negative.

4. HEIFER 4574.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 27.3.19 with 200 grammes of finely-crushed vertebrae that had been obtained from the carcass of tollie 4469 that died at Onderstepoort on 15.3.19 from causes other than lamsiekte.

Result: Negative.

5. HEIFER 4571.—Arrived at Onderstepoort on 17.3.19 from Pretoria and had been stabled since then.

Treatment: Drenched on 27.3.19 with 300 grammes finely-chopped ribs that had been obtained from the carcass of horse 12449 that died at Onderstepoort on 12.2.19 from shock.

Result: Negative.

6. HEIFER 4572.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 27.3.19 with 200 grammes finely-chopped ribs that had been obtained from the carcass of horse 1249 that died at Onderstepoort on 12.2.19 from shock.

Result: Negative.

7. HEIFER 4580.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on the 3.4.19 with 200 grammes finely-chopped ribs that had been obtained from the carcass of horse 12541 that died at Onderstepoort on 28.3.19 from horse-sickness.

Result: Negative.

8. HEIFER 4581.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 3.4.19 with 150 grammes finely-chopped ribs that had been obtained from the carcass of horse 12541 that died at Onderstepoort on 28.3.19 from horse-sickness.

Result: Negative.

9. HEIFER 4579.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 3.4.19 with 70 grammes finely-crushed ribs that had been obtained from the carcass of sheep 14077 that died at Onderstepoort on 28.3.19 from pneumonia.

Result: Negative.

10. HEIFER 4706.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 28.4.19.

Treatment: Drenched on 4.12.19 with 480 grammes finely-crushed bones (ribs and vertebrae) collected from carcasses of animals which had died at Onderstepoort.

Result: Negative.

11. HEIFER 4680.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 9.12.19 with 480 grammes finely-crushed bones (vertebrae) that had been obtained from the carcass of heifer 4655 which had died at Onderstepoort on 4.12.19.

Result: Negative.

12. HEIFER 4698.—Arrived at Onderstepoort on 29.3.20 from Pretoria and stabled since 15.5.20.

Treatment: Drenched on 30.1.20 with 480 grammes finely-crushed bones (vertebrae and ribs) that had been obtained from the carcass of bull 4775 which was killed at Onderstepoort on 16.1.20 while in a healthy condition.

NOTE.—This bull was in apparently good health, and was killed specially for the collection of putrefying material from its carcass. The carcass was deposited in a special wire enclosure in which only one other carcass was present, viz., that of horse 13378, experiment XXI.

Result: Symptoms of muscular weakness were first observed on the morning of the 3rd February, the animal showing a stiff gait, not feeding, salivating, etc. The animal rapidly got worse, and by 1 p.m. the same day it was lying down and unable to rise, showing marked paralysis of the jaw, tongue, and throat muscles, and inability to swallow.

On the 4th it was lying stretched out on its side in a helpless condition, and died at midday.

Epicrisis: After an incubation period of four days the animal developed an acute attack of lamsiekte, from which it died after only 1½ day's visible illness.

EXPERIMENT VIII.—DRENCHING OF CATTLE WITH MIXED PUTRID BONES OBTAINED FROM THE CARCASSES OF VARIOUS ANIMALS THAT DIED AT ONDERSTEPPOORT.

Drenching experiments with putrid bones collected from single carcasses having failed to produce lamsiekte, it was decided to collect bone material from different animals (horses, cattle, and dogs) in different stages of putrefaction, mix them all together, and then use the mixture for drenching cattle.

It was thought that by using such mixtures the chances of obtaining toxic substances (if the lamsiekte organisms were present at all) would be much greater than when material from only one carcass was used.

The mixture was made up of vertebrae, ribs, and sternum, collected from the carcasses of five horses, three cattle, one dog, which died at different periods, and the bones of which, therefore, showed various degrees of putrefaction.

1. HEIFER 4585.—Arrived at Onderstepoort on the 17.3.19 from Pretoria and stabled since 8.4.19.

Treatment: Drenched on 8.4.19 with 250 grammes finely-crushed mixed bones from carcasses of different animals that died at Onderstepoort.

Result: Negative.

2. HEIFER 4661.—Arrived at Onderstepoort on the 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 12.4.19 with 300 grammes finely-crushed mixed bones that had been obtained from carcasses of different animals that died at Onderstepoort.

Result: Negative.

3. HEIFER 4588.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 24.4.19 with 360 grammes finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

4. HEIFER 4590.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 24.4.19 with 480 grammes finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

5. HEIFER 4587.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 8.4.19 with 250 grammes crushed mixed bones obtained from carcasses of different animals that died at Onderstepoort.

Result: Negative.

6. HEIFER 4662.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 12.4.19 with 300 grammes finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

7. HEIFER 4591.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 24.4.19 with 420 grammes finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

8. HEIFER 4592.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 24.4.19 with 480 grammes finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

9. HEIFER 4593.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 24.4.19 with 360 grammes of finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

10. HEIFER 4666.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 24.4.19 with 420 grammes finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

11. HEIFER 4667.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 24.4.19 with 480 grammes of finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

12. HEIFER 4668.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 24.4.19 with 540 grammes of finely-crushed mixed bones obtained from carcasses of different animals that had died at Onderstepoort.

Result: Negative.

EXPERIMENT IX.—DRENCHING OF CATTLE WITH PUTRID FLESH OBTAINED FROM THE CARCASSES OF DIFFERENT ANIMALS.

1. HEIFER 4704.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 30.4.19.

Treatment: Drenched on 30.4.19 with 480 grammes of putrid flesh obtained from the carcass of horse 12651 that had died at Onderstepoort on 28.4.19 from horse-sickness.

Result: Negative.

2. HEIFER 4751.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 30.4.19.

Treatment: Drenched on 1.5.19 with 480 grammes of putrid flesh obtained from the carcass of horse 12651 that had died at Onderstepoort on 28.4.19 from horse-sickness.

Result: Negative.

3. HEIFER 4737.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 30.4.19.

Treatment: Drenched on 2.5.19 with 480 grammes of putrid flesh obtained from the carcass of horse 12651 that had died at Onderstepoort on 28.4.19 from horse-sickness.

Result: Negative.

4. HEIFER 4017.—Arrived at Onderstepoort on 26.8.17 from Cape Province and stabled since 3.9.17.

Treatment: Drenched on 7.11.19 with 480 grammes of putrid flesh obtained from the carcasses of cattle that died at Onderstepoort of diseases other than lamsiekte.

Result: Negative.

EXPERIMENT X.—DRENCHING OF CATTLE WITH MATERIAL FROM AN UNOPENED CARCASS OF A HORSE PLACED WITHIN A SHORT DISTANCE OF A NUMBER OF LAMSIEKTE CARCASSES.

1. HEIFER 4414.—Born at Onderstepoort on 10.10.18 and stabled since 18.12.19.

Treatment: Drenched on 22.12.19 with 480 grammes pycnosoma larvae collected on the carcass of horse 11339.

Result: Negative.

2. HEIFER 4555.—Born at Onderstepoort on 19.2.19 and stabled since 18.12.19.

Treatment: Drenched on 24.12.19 with 480 grammes pycnosoma larvae obtained from the carcass of horse 11339.

Result: Negative.

3. HEIFER 4509.—Born at Onderstepoort on 13.1.19 and stabled since 18.12.19.

Treatment: Drenched on 27.12.19 with 480 grammes of pycnosoma larvae obtained from the carcass of horse 11339.

Result: Negative.

4. HEIFER 4503.—Born at Onderstepoort on 23.12.19 and stabled since 18.5.19.

Treatment: Drenched on 29.12.19 with 480 grammes pycnosoma larvae obtained from the carcass of horse 11339.

Result: Negative.

5. HEIFER 4482.—Born at Onderstepoort on 10.12.18 and stabled since 18.12.19.

Treatment: Drenched on 2.1.20 with 480 grammes putrid flesh obtained from the carcass of horse 11339.

Result: Negative.

6. HEIFER 4415.—Born at Onderstepoort on 10.10.18 and stabled since 18.12.18.

Treatment: Drenched on 5.1.20 with 480 grammes of putrid bones obtained from the carcass of horse 11339.

Result: Negative.

7. Bull 4503.—Born at Onderstepoort on 12.7.18 and stabled since 18.12.19.

Treatment: Drenched on 4.2.20 with 480 grammes of putrid bones obtained from the carcass of horse 11339.

Result: Negative.

SERIES B.

DRENCHING WITH MATERIAL ORIGINATING FROM ARMOEDSVLAKTE.

EXPERIMENT I.—DRENCHING OF CATTLE WITH FLY PUPAE COLLECTED FROM CARCASSES OF CATTLE THAT DIED OF LAMSIEKTE.

1. HEIFER 4574.—Arrived at Onderstepoort on 7.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 3.4.19 with 180 grammes blow-fly pupae reared on carcasses of cattle that died of lamsiekte at Armoedsvlakte.

Result: Negative.

2. HEIFER 4576.—Arrived at Onderstepoort on 7.3.19 from Pretoria and stabled since that date.

Treatment: Drenched on 3.4.19 with 90 grammes blow-fly pupae reared on carcasses of cattle that died of lamsiekte at Armoedsvlakte.

Result: Negative.

3. HEIFER 4669.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 24.4.19 with 300 grammes blow-fly pupae reared on carcasses of cattle that died of lamsiekte at Armoedsvlakte.

Result: Negative.

EXPERIMENT II.—DRENCHING CATTLE WITH BLOW-FLIES HATCHED OUT FROM PUPAE COLLECTED ON CARCASSES OF CATTLE THAT DIED OF LAMSIEKTE.

1. HEIFER 4583.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 5.4.19 with 45 grammes blow-flies (crushed) hatched out from pupae reared on carcasses of cattle that had died of lamsiekte at Armoedsvlakte.

Result: Negative.

2. HEIFER 4586.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 8.4.19 with 100 grammes blow-flies (crushed) hatched out from pupae reared on carcasses of cattle that had died of lamsiekte at Armoedsvlakte.

Result: Negative.

3. HEIFER 4660.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 12.4.19 with 215 grammes blow-flies (crushed) hatched out from pupae reared on carcasses of cattle that had died of lamsiekte at Armoedsvlakte.

Result: Negative.

4. HEIFER 4665.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 28.4.19 with 300 grammes blow-flies (macerated) hatched out from pupae reared on carcasses of cattle that had died of lamsiekte at Armoedsvlakte.

Result: Negative.

EXPERIMENT III.—DRENCHING OF CATTLE WITH DECOMPOSED FLESH OBTAINED FROM CARCASSES OF CATTLE THAT DIED OF LAMSIEKTE.

NOTE.—The material consisted of half-dried, stale-smelling portions of hide, muscle, and stomach-wall collected from a carcass at Armoedsvlakte which had been proved to contain highly toxic substances.

1. HEIFER 4756.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 8.5.19.

Treatment: Drenched on 9.5.19 with 100 grammes putrid meat obtained from a carcass of cattle that died of lamsiekte at Armoedsvlakte.

Result: Negative.

2. HEIFER 4679.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 8.5.19.

Treatment: Drenched on 9.5.19 with 500 grammes putrid meat obtained from the carcass of cattle which had died of lamsiekte at Vryburg (Armoedsvlakte).

Result: 14.5.19: Down; unable to rise in front. Posteriorly, available effort limited to the hocks. Appearance and carriage bright; muzzle dry; faeces passed.

15.5.19: Down; unable to get up; muzzle dry; anxious expression.

16.5.19: Died from lamsiekte.

EXPERIMENT IV.—DRENCHING CATTLE WITH MATERIAL FROM AN ANIMAL SENT ALIVE FROM ARMOEDSVLAKTE AND KILLED AT ONDERSTEPPOORT.

1. HEIFER 4680.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 8.5.19.

Treatment: Drenched on 23.5.19 with 480 grammes putrid flesh obtained from bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

2. HEIFER 4769.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 27.5.19 with 480 grammes putrid flesh obtained from bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

3. HEIFER 4706.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 3.6.19 with 455 grammes putrid flesh obtained from bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

4. HEIFER 4703.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 8.6.19 with 480 grammes finely-crushed bones (ribs) obtained from carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

5. HEIFER 4708.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 8.6.19 with 480 grammes finely-crushed bones (ribs) obtained from carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

6. HEIFER 4740.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 26.6.19 with 480 grammes finely-crushed bones (vertebrae) obtained from the carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

7. HEIFER 4767.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 26.6.19 with 480 grammes finely-crushed bones (vertebrae) obtained from the carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

8. Ox 4788.—Arrived at Onderstepoort on 25.6.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 4.7.19 with 480 grammes putrid bones obtained from carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

9. BULL 4789.—Arrived at Onderstepoort on 25.6.19 from Pretoria and stabled since then.

Treatment: Drenched on 4.7.19 with 480 grammes putrid bones obtained from the carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

10. HEIFER 4750.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 15.7.19 with 480 grammes putrid bones obtained from the carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

11. BULL 4790.—Arrived at Onderstepoort on 25.6.19 from Pretoria and stabled since then.

Treatment: Drenched on 15.7.19 with 480 grammes putrid bones obtained from the carcass of bull 4780 killed at Onderstepoort on 13.5.19.

Result: Negative.

12. HEIFER 4743.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 23.5.19 with 150 grammes fly larvae and again on 27.5.19 with 150 grammes fly larvae reared on carcass of bull 4780 that was killed at Onderstepoort on 13.5.19.

Result: Negative.

13. HEIFER 4727.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 2.6.19 with 240 grammes fly larvae reared on carcass of bull 4780 that was killed at Onderstepoort on 13.5.19.

Result: 12.6.19: Rather marked salivation present, dull, coat staring.

14.6.19: Slight salivation still present, rather dull.

16.6.19: Salivation more marked, animal dull and inclined to lie down.

From this date the animal gradually recovered, and was eventually discharged. At no time during its slight illness were there any definite symptoms of paralysis or lamsiekte.

14. HEIFER 4725.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: Drenched on 3.6.19 with 400 grammes fly larvae reared on carcass of bull 4780 that was killed at Onderstepoort on 13.5.19.

Result: Negative.

EXPERIMENT V.—DRENCHING CATTLE WITH PUTRID BONE MATERIAL OBTAINED FROM ARMOEDSVLAKTE.

1. HEIFER 4577.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 3.4.19 with 240 grammes crushed bones (slightly moist and offensive smell) obtained from carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

2. HEIFER 4578.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 3.4.19 with 120 grammes crushed bones (slightly moist and offensive smell) obtained from carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

3. HEIFER 4687.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 30.4.19.

Treatment: Drenched on 2.6.19 with 360 grammes putrid bones (slightly moist and offensive smell) that had been obtained from carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

4. BLACK HEIFER 4670.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 24.4.19.

Treatment: 24.4.19: Drenched with 480 grammes putrid crushed bone received from Armoedsvlakte on 31.3.19.

1.5.19: 11.30 a.m.: Apparently in good health. 2 p.m.: On the way to dip signs of weakness. After dipping, on the way home, animal went down and was carried to stable.

Symptoms were: Lying down in sternal position, tendency to droop head, ears hanging; eyes bright, nose dewy; unable to rise; on left side ribs and hip showed abrasions; tongue muscles apparently normal.

2.5.19: 8 a.m.: Lying down in sternal position; movement of jaw; signs of salivation. When approached it rose with some difficulty and remained on legs for about one minute; marked muscular weakness; wild, staring expression, and flopped down again, lying in sternal position.

3.5.19: 8 a.m.: Still able to get up; remained standing for some time; slight salivation; neither feeding nor drinking.

4.5.19: Still able to get up without assistance; lying down most of the time; neither feeding nor drinking.

5.5.19: Animal getting weaker; salivation quite marked; neither feeding nor drinking.

6.5.19: Very weak; inclined to lie down on its side; salivation marked.

7.5.19: Lying in extended position on side; semi-comatose; muzzle dry; salivation not marked; not feeding or drinking.

8.5.19: Died during night.

Epicrisis: The animal developed symptoms of lamsiekte after an incubation period of seven days, and the illness lasted for 6½ days. The symptoms resembled those usually met with in a typical case of the ordinary acute form of the disease naturally contracted in the veld, i.e. muscular weakness developed gradually, the disease lasting several days.

Paralysis of the tongue and jaw muscles also came on gradually, as is often the case in these forms of the disease.

5. HEIFER 4695.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 30.4.19.

Treatment: 2.5.19: Drenched with 480 grammes putrid crushed bone received from Armoedsvlakte on 31.3.19.

Result: 6.5.19: At 4 p.m. the animal seemed uneasy; disinclined to move; walking with a rather sluggish, stiff gait in the forequarters.

7.5.19: Down; refused to rise; faeces in pellets, mucoid coated; muzzle dry; carriage of head languid.

Died at 4 p.m.

Epicrisis: After an incubation period of only four days, the animal showed symptoms of a very acute form of lamsiekte, from which it died the following afternoon. The disease could be diagnosed definitely by the symptoms which appeared during the illness of the animal and by the post-mortem lesions. Blood-smear examination gave negative results.

EXPERIMENT VI.—DRENCHING OF CATTLE WITH FLY PUPAE COLLECTED ON CARCASSES AT ARMOEDSVLAKTE.

1. HEIFER 4047.—Born at Onderstepoort on 5.11.17 from cow 3400 and stabled since 5.12.17.

Treatment: Drenched on the 11.3.19 with 60 grammes fly pupae reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

2. HEIFER 4068.—Born at Onderstepoort on 2.12.17 from cow 3250 and stabled since 3.4.18.

Treatment: Drenched on 11.3.19 with 30 grammes fly pupae reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

3. Ox 3986.—Arrived at Onderstepoort on 11.3.19 from Lidgetton and stabled since then.

Treatment: Drenched on 11.3.19 with 120 grammes fly pupae reared on carcasses of animals that died at Armoedsvlakte.

Result: Died on 12.3.19.

The animal was found dead in the stable in the morning, the abdomen being much distended with gas. Post-mortem examination revealed the usual signs seen in cases of acute toxæmia. Microscopic examination of blood-smears gave negative results.

4. HEIFER 4582.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 5.4.19 with 162 grammes fly pupae (a few flies and many empty shells) reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

5. HEIFER 4584.—Arrived at Onderstepoort on 17.3.19 from Pretoria and stabled since 8.4.19.

Treatment: Drenched on 8.4.19 with 130 grammes fly pupae (a few flies and some empty shells) reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

6. HEIFER 4671.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since then.

Treatment: Drenched on 25.4.19 with 120 grammes fly pupae reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

7. HEIFER 4663.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 25.4.19 with 240 grammes fly pupae reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

8. HEIFER 4664.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: Drenched on 25.4.19 with 480 grammes empty shells of fly pupae reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

9. HEIFER 4774.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 4.4.19.

Treatment: 30.4.19: Drenched with 120 grammes pupae received from Armoedsvlakte on 29.4.19.

Result: 8.5.19: 7 a.m.: Dull; stiff both forelegs; hanging head. 9 a.m.: Rises with difficulty; lies down a great deal; staring eye; anxious expression; muzzle moist.

9.5.19: Died during the night.

Epicrisis: After an incubation period of eight days the animal developed symptoms of, and died from, a disease closely resembling a very acute form of lamsiekte.

The diagnosis of lamsiekte was confirmed by blood examination and the usual rather characteristic lesions found on post-mortem examination.

The temperature of the animal remained normal during the course of the disease.

10. HEIFER 4694.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 30.4.19.

Treatment: 30.4.19: Drenched on 30.4.19 with 240 grammes pupae received from Armoedsvlakte on 29.4.19.

Result: 4.5.19: Late this afternoon the animal was seen to be rather uneasy, slow, sluggish gait, and tucked-up appearance.

5.5.19: She was found down this morning and unable to rise. In the afternoon very weak and inclined to lie stretched out on its side.

6.5.19: Died during the night.

Epicrisis: After an incubation period of four days the animal showed symptoms of acute lamsiekte, from which it died after an illness lasting only two days. Its temperature remained normal throughout, and blood examination gave negative results. The post-mortem appearances were those usually seen in acute cases of the disease.

11. HEIFER 4765.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 9.4.19.

Treatment: 30.4.19: Drenched with 360 grammes pupae received from Armoedsvlakte on 29.4.19.

Result: 4.5.19: Nothing abnormal noticed yesterday afternoon. Found dead this morning.

Epicrisis: After an incubation period of four days the animal took ill and died suddenly. Microscopic examination of the blood gave negative results.

The lesions found on post-mortem examination were those usually met with in acute cases of lamsiekte.

12. HEIFER 4768, 2½ years.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 30.4.19.

Treatment: 30.4.19: Drenched with 480 grammes pupae received from Armoedsvlakte on 29.4.19 (internal hæmorrhage carcass).

Result: 9.5.19: 7 a.m.: Disinclined to rise. Muzzle dry, salivation; carriage of head and reflexes still normal; lying down, but able to rise; stiff in form of lamsiekte gait. Faeces soft, badly digested, containing whole grass and grain; colour greyish.

11.5.19: Lying down in normal position, but disinclined to get up. On forcing it to rise, walked with very lame gait in right fore limb. No other symptoms noted.

12.5.19: Lying down most of the time and disinclined to rise. Lameness still more marked in one shoulder. Not feeding well.

13.5.19: Unable to get up; lying in sternal position; muzzle getting dry; not feeding.

14.5.19: Still down in sternal position; unable to rise.

15.5.19: 7 a.m.: Still lying down, bright, feeding when food offered.

16.5.19 From this date onwards it simply lay in a helpless condition, and later developed decubital sores. It was finally destroyed on 27.5.19, when in a very miserable condition.

Epicrisis: After an incubation period of nine days the animal developed symptoms of a rather slow, subacute form of lamsiekte. Muscular weakness developed gradually, and it was only on the fifth day after the onset of symptoms that the animal could no longer support itself on its legs.

Its temperature remained normal throughout the course of the disease, which was an exceptionally long one, viz., eighteen days. In the end the animal was in miserable condition, had developed decubital sores, and was killed when practically *in extremis*.

13. HEIFER 4766.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 30.4.19.

Treatment: 30.4.19: Drenched with 600 grammes pupae received from Armoedsvlakte on 29.4.19.

Result: 8.5.19: 7 a.m.: Down, unable to rise. 10 a.m.: Down; muzzle moist; salivation; crusting round nostrils; eye injected.

9.5.19: Down, unable to rise, sternal position with head thrown round; respirations increased to 60; muzzle moist; caked round nostrils; eyes red; salivation increased; tongue pendulous; oral paresis present.

11.5.19: Still lying in sternal position with head turned to flank; mouth open and tongue protruding a few inches.

12.5.19: Lying stretched out on its side and in very weak condition; marked paralysis of the tongue and jaw muscles. Died at 2 p.m.

Epicrisis: After an incubation period of eight days the animal showed typical symptoms of acute lamsiekte, which lasted for nearly five days before death took place. The temperature remained normal during the course of the disease, and the post-mortem appearances were those of lamsiekte. Paralysis of the tongue and jaw muscles was one of the most characteristic symptoms.

14. HEIFER 4672.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 28.6.19.

Treatment: Drenched on 30.4.19 with 480 grammes empty shells of fly pupae reared on carcasses of animals that had died at Armoedsvlakte.

Result: Negative.

SERIES C.

DRENCHING WITH MATERIAL OBTAINED AT ONDERSTEEPOORT,
BUT ORIGINATING FROM ARMOEDSVLAKTE.EXPERIMENT No. I.—DRENCHING ANIMALS WITH PUTRID BONES COLLECTED FROM
HEIFER 4670.

1. HEIFER 4753.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 18.6.19.

Treatment: Drenched on 26.6.19 with 480 grammes finely-crushed putrid bones (vertebrae) obtained from heifer 4670 that died of lamsiekte on 8.5.19.

Result: Negative.

2. HEIFER 4761.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 18.6.19.

Treatment: Drenched on 26.6.19 with 480 grammes finely-crushed putrid bones (vertebrae) obtained from heifer 4670 that died of lamsiekte on 8.5.19.

Result: Negative.

3. BULL 4786.—Arrived at Onderstepoort on 25.6.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 30.6.19 with 480 grammes finely-crushed putrid bones (vertebrae) obtained from heifer 4670 that died of lamsiekte on 8.5.19.

Result: Negative.

4. HEIFER 4755.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 15.5.19.

Treatment: Drenched on 15.7.19 with 480 grammes finely-crushed putrid bones (vertebrae) obtained from heifer 4670 that died of lamsiekte on 8.5.19.

Result: Negative.

EXPERIMENT No. II.—DRENCHING WITH MATERIAL FROM HEIFER 4695.

NOTE.—Heifer 4695 died of lamsiekte at Onderstepoort on 7.5.19, as a result of drenching with bones forwarded from Armoedsvlakte.

1. HEIFER 4701 arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 27.6.19.

Treatment: Drenched on 30.6.19 with 480 grammes of putrid bones obtained from heifer 4695 that died on 7.5.19.

Result: Negative.

2. BULL 4791.—Arrived at Onderstepoort on 25.6.19 from Pretoria and stabled since arrival.

Treatment: Drenched on 15.7.19 with 480 grammes of putrid bones obtained from heifer 4695 that died on 7.5.19.

Result: Negative.

3. HEIFER 4760.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 15.5.19.

Treatment: Drenched on 23.5.19 with 240 grammes of fly larvae reared at Onderstepoort on the carcass of heifer 4695, an animal that died of lamsiekte on 7.5.19.

Result: Negative.

4. HEIFER 4675.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 5.6.19.

Treatment: Drenched on 8.6.19 with 240 grammes of fly pupae reared at Onderstepoort on the carcass of heifer 4695, an animal that died of lamsiekte on 7.5.19.

Result: Negative.

EXPERIMENT No. III.—DRENCHING WITH MATERIAL FROM HEIFER 4765.

NOTE.—Heifer 4765 died of lamsiekte at Onderstepoort on 4.5.19, as a result of drenching with fly pupae originating from Armoedsvlakte.

1. HEIFER 4688.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 8.5.19.

Treatment: Drenched on 14.5.19 with 120 grammes macerated larvae reared on carcass of heifer 4765, an animal that died on 4.5.19.

Result: Negative.

2. HEIFER 4732.—Arrived at Onderstepoort on 29.3.19 from Pretoria and stabled since 8.5.19.

Treatment: Drenched on 14.5.19 with 120 grammes macerated larvae reared on carcass of heifer 4765, an animal that died on 4.5.19.

Result: Negative.