

INOCULATION OF SHEEP AGAINST BLUE TONGUE AND THE RESULTS IN PRACTICE.

The possibility of obtaining a virus and serum which would immunise sheep against blue tongue was mentioned by Spreull some few years ago, and in the article entitled "Blue Tongue in Sheep," included in my Annual Report for 1904-5, details were given of several experiments which were conducted in the way he indicated.

However, the reaction necessary to produce an active immunity was not noticed in these injected sheep, and as it was probable that the large dose of serum given was responsible, in the next experiments I reduced the quantity.

The virus was now passed through several generations of sheep, the details of which are given hereunder :—

Generation of Virus.	No. of Sheep Injected.	Deaths During Injection.
1	9	1
2	7	2
3	4	1
4	3	1
5	3	1
6	3	0
7	12	0
8	11	1
9	35	2
10	6	1
	93	10
11	49	0
12	19	0
13	28	0
14	13	0
15	24	0
16	17	0
17	31	0
18	118	0
	299	0

From this table it will be seen that after the 10th generation the injection of virus did not cause any deaths. In addition to this, the temperature charts proved that all animals passed through a typical, yet rather severe, form of blue tongue, but no clinical symptoms were observed.

The percentage of mortality from the first 10 generations, out of 93 inoculated, was 11 per cent., and from the 11th to the 18th generation of 299 inoculated, *nil*.

After testing the sheep from the 11th generation onwards, and finding that the immunity given was equal to that obtained from a natural attack, I decided to introduce this attenuated virus into practice in the form of a vaccine. This was done in February, 1907, and at the end of the season statistics were collected as to the results obtained.

Unfortunately only a small percentage of results came to hand, which are given hereunder. The deaths following vaccination have been divided into those occurring—(1) within 9 days from inoculation; (2) from 10th to 14th days; and (3) after 14 days from inoculation.

The reason for this being that the whole course of blue tongue averages 14 days, and this period must, therefore, be allowed for the reaction consequent on the vaccine before immunity is finally established. An animal already suffering from the disease at the date of vaccination would probably die within 9 days.

Deaths occurring between the 10th and 14th days are not considered as a result of natural infection, and the vaccine is probably held responsible. At the same time I must point out that of the 299 sheep vaccinated at this station, none died, but when the vaccine is used in practice on thousands of animals, some deaths are certain to occur. Mortality after the reaction has finished (that is to say, from the 14th day onwards) have been considered as relapses (breakdowns in immunity).

As in many instances farmers did not inoculate their whole flocks, statistics were also collected regarding the mortality amongst the non-vaccinated animals, and, for the purposes of comparison, have been embodied in the following return :—

RETURNS OF MORTALITY AMONGST VACCINATED SHEEP AS
COMPARED WITH MORTALITY OF NON-VACCINATED
SHEEP RUNNING ON THE SAME FARM.

DISTRICT.	VACCINATED SHEEP.				NON-VACCINATED SHEEP.		PER CENT. OF DEATHS AMONGST	
	No. Vaccinated.	No. which Died within.		No. which Died after 14 Days.	Number.	No. which Died.	Vaccinated Animals.	Non-Vaccinated.
		1—9 Days.	10—14 Days.					
Ermelo ...	1,906	12	17	2	3,228	336	Per cent.	Per cent.
Heidelberg ...	23	1	0	2	3,542	283	0.9	10.
Middelburg ...	142	39	6	0	2,204	599	0	8.
Lydenburg ...	966	0	1	3	2,289	200	3.0	27.
Marico ...	36	1	0	0	400	16	0.1	9.
Waterberg ...	1,200	0	0	0	Not stated.	0	0	4.
Rustenburg ...	11	0	0	0	0	—
Pretoria ...	1,065	19	1	0	0	—
Barberton ...	10	0	0	0	130	Nil	0.1	—
Standerton ...	106	2	1	0	4,425	383	0	0
Volskrust ...	10	0	0	0	—	—	0.9	9.
	5,875	74	26	7	16,218	1,817	0	—
							0.4	11.0

Naturally these figures only represent a small minority of the sheep in the Transvaal, and the number vaccinated during the season, but the return is accurate as regards the statistics at my disposal, and the results may safely be considered as typical for the Colony. The percentage of deaths due to the vaccination is 0.4 per cent., and relapses amount to 0.1 per cent.

These results show very clearly the advantage vaccinated sheep have over susceptible animals.

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