

“E.”—FURTHER NOTES ON IMMUNITY IN HORSE-SICKNESS.

In my article, “The Immunity in Horse-Sickness,” included in the Annual Report for last year, I stated that the mortality amongst immunised mules when exposed to natural infection amounted to 0.6 per cent., and expressed the opinion that the cause of this mortality was due to the presence of virus of varying virulency in different districts. In particular, one virus from Tzaneen and another from Bulawayo were referred to, each of which was of greater virulency than the virus used for previous immunisations, and known as Ordinary. As this question of immunity is of the utmost importance, I continued experimenting with various kinds of virus, and carefully noted the results obtained by testing animals with (*a*) the same, and (*b*) a different strain of virus to that with which they were immunised.

All the animals used for these experiments were treated in the same way; that is to say, an animal was injected with a strain of virus (for instance, Ordinary, or Tzaneen, etc.) of a particular generation. The result of this injection was taken from the temperature charts and recorded as either reaction or doubtful reaction, or reaction with dikkop, or reaction and died. All temperature reactions accompanied with piroplasma equi, or atypical horse-sickness reactions, suggesting the presence of a different disease, have been excluded. At a later date this animal was tested on its immunity against horse-sickness by the injection or infusion of virus of a certain generation. In the cases of testing by injection, 2 c.c. of virus was the minimum quantity used, and for infusion it varied from 350 c.c. to 45,000 c.c.

The results of these tests were again classified under reaction, doubtful reaction, etc.

EXPLANATION OF TABLES.

In the following tables certain symbols, such as OTB and O-T-B appear, which must be explained. A virus or serum obtained by mixing the three strains, Ordinary, Tzaneen and Bulawayo, was, for the sake of brevity, designated O-T-B. But if the three vira were consecutively injected, and at the height of the fever reaction the animal was tapped and the blood utilised as virus, this trivalent virus was called OTB. Thus the symbol OTBLPW means that eight different vira—Ordinary, Tzaneen, Bulawayo, Lydenburg, Piet Retief, and Pietersburg (2) and Warmbaths—were consecutively injected, and an octovalent virus obtained from the animal during the fever reaction.

O, Ord., or Ordinary virus, represents a virus known as Ordinary, which was originally collected in the Pretoria District, and subsequently introduced into practice in November, 1905.

T, Tzn., or Tzaneen virus, represents a virus collected in Tzaneen, and which was introduced into practice in July, 1906.

B, Bul., or Bulawayo virus, represents a virus collected from a mule, which had died of horse-sickness at Bulawayo, but not yet introduced into practice.

O-T-B virus represents a mixture of the three vira Ordinary, Tzaneen and Bulawayo.

OTB virus represents a strain of virus obtained by consecutively injecting an animal with Ordinary, Tzaneen and Bulawayo virus, and at the height of horse-sickness reaction the animal was tapped and the blood used as virus (OTB).

OTBLPW virus represents a mixture obtained in the same way as OTB, but in addition contained virus collected from Lydenburg, Piet Retief, Pietersburg (2) and Warmbaths.

Dale virus represents a virus forwarded by Government Veterinary Surgeon Dale of Potchefstroom, and obtained from a mule which died of horse-sickness contracted spontaneously.

Edgar virus represents a virus forwarded by Government Veterinary Surgeon Edgar of Pietersburg, and obtained from a mule which died of horse-sickness contracted spontaneously.

Elder virus represents a virus forwarded by Government Veterinary Surgeon Elder of Swaziland, and obtained from a horse which died of horse-sickness contracted spontaneously.

Turnbull virus represents a virus forwarded by Government Veterinary Surgeon Turnbull, of Barberton, and obtained from a horse which died of horse-sickness contracted spontaneously.

Cape Colony virus represents a virus obtained from a mule which died of horse-sickness contracted spontaneously in the Cape Colony.

Altenroxel virus represents a virus obtained from various mules which died of horse-sickness, owner Mr. Altenroxel, of Tzaneen Estate, Pietersburg.

The full history of the treatment accorded to each animal is apparent from the tables, but a brief explanation may prove useful. An animal was immunised against horse-sickness on a certain date by the injection of 2 c.c. virus from a horse (origin either Ordinary, Tzaneen, etc.) of a particular generation and serum in varying quantities. The amount of serum is immaterial, and has been excluded in all the tables. The result of this injection of virus and serum was either (1) no reaction represented by —, (2) doubtful reaction represented by —, (3) reaction represented by R; (4) reaction accompanied with the lesions of dikkop, represented by RD; (5) reaction and died, represented R†; and (6) reaction accompanied with the lesions of dikkop and died, represented by RD†.

The animal was then subsequently tested, either by the injection of 2 c.c. to 5 c.c. virus, or by hyperimmunisation varying from 100 c.c. to 6 litres of a horse or mule (origin Ordinary, Tzaneen, etc., and of a certain generation).

The result was again classified under the headings Reaction, Doubtful Reaction, etc., and in cases where no result is given, naturally it means that the test failed to cause any temperature reaction, and no clinical symptoms were noted.

Second, third and subsequent tests are all given, the order in which they were made being shown by the date.

With the following exceptions the virus used for immunising or testing refers to virus obtained from horses:—

Virus 547 was obtained from a mule 547 (O strain).

Virus 548 " " " 548 "

Virus 561 " " " 561 "

Virus 659 " " " 659 "

Virus 666 " " " 666 "

Virus 701 " " " 701 "

Virus 1180 " " " 1180 "

Virus 1427 was obtained from a donkey previously injected with horse-sickness virus 726 (O strain).

Virus 1487 was obtained from a mule previously injected with virus which had passed through goats Nos. 375, 378 and 381.

Virus X was a mixture obtained from the blood of goats 375, 378 and 381, which had all previously been injected with horse virus 382.

Virus 1785 is a virus obtained from horse 1785 which had previously been injected with Turnbull virus (*q.v.*).

Virus 1788 is a virus obtained from mule 1788 which had previously been injected with Dale virus (*q.v.*)

Virus 1957 is a virus obtained from horse 1957 which had previously been injected with virus from mule 1772 (an animal inoculated with blood from a mule which died of horse-sickness contracted spontaneously in Warmbaths).

Virus 1418 and virus 2284.—Virus 2284 was obtained from mule 2284 which had been previously injected with virus from mule 1418 (an animal inoculated with blood from a case of horse-sickness in Cape Colony).

Virus 1506 is a virus obtained from horse 1506, which had previously been injected with blood of donkeys 1427, 1429, 1430 and 1433 (animals injected with O strain of virus).

Virus 1489 is a virus obtained from mule 1489, previously injected with blood from donkey 1599 (an animal injected with O strain of virus).

Virus 2169 and virus 2267 are two vira, the former obtained from horse 2169, and the latter from mule 2267, both animals having been inoculated with virus from donkey 1773 (an animal injected with Tzaneen virus—*q.v.*).

Virus 2201 is a virus obtained from horse 2201, an animal previously injected with blood from donkey 2208 (2208 was inoculated with Bulawayo virus—*q.v.*).

IMMUNISATION OF MULES WITH ORDINARY VIRUS.

Mule No.	IMMUNISATION.				Result.	TEST.				Result.						
	Date of Injection.	Virus.				Date of Injection.	Virus.									
		No.	Orig.	Gen.			No.	Qn.	Orig.		Gen.					
150	1902. Nov. 26	216	Ord.	6	R	1903. Feb. 9	262	c.c.	250	Ord.	5					
						March 5	278	500	"	7	—					
						1903. Jan. 10	227	"	7	R	Feb. 20	265	100	"	6	—
201	1903. Jan. 10	227	"	7	R	Feb. 20	278	250	"	7	—					
						April 8	295	500	"	9	—					
						1906. Oct. 15	2199	5	Tzn.	12	—					
320	June 4	300	"	10	R	1903. Aug. 17	354	500	Ord.	12	—					
						Dec. 30	370	1000	"	14	—					
							310	1500	"	10	—					
341	July 23	335	"	11	—	Aug. 17	354	500	"	12	—					
						Dec. 12	370	1000	"	14	—					
							390	1500	"	17	—					
368	Oct. 31	350	"	15	—	Dec. 12	390	1500	"	17	—					
						Dec. 31	410	1000	"	17	—					
						1904. May 5	512	1500	"	24	—					
371	Sept. 23	352	"	14	—	1903. Dec. 11	390	500	"	17	—					
						1904. Jan. 5	390	"	17	—						
						1904. Feb. 3	425	500	"	20	—					
412	1904. Jan. 5	390	"	17	—	March 7	447	1000	"	22	—					
						April 25	450	500	"	22	—					
						May 14	388	1500	"	17	—					
413	Feb. 15	419	"	20	R	1904. May 14	387	2100	"	25	—					
						Mar. 7	417	5	"	22	—					
						May 27	385	3000	"	26	—					
415	Jan. 12	390	"	17	—	May 27	520	300	"	26	—					
						Sept. 22	609	2000	"	30	—					
						1905. Nov. 1	557	8000	"	33	—					
448	Mar. 1	446	"	21	—	1905. Oct. 14	1378	3000	"	51	—					
						Oct. 17	1385	6000	"	50	—					
						1904. Oct. 18	547	9750	"	32	—					
459	"	446	"	21	—	1904. Oct. 18	547	9750	"	32	—					
						Feb. 29	446	"	21	RD	April 25	481	1000	"	23	—
											June 22	528	500	"	25	—
462	Feb. 29	446	"	21	RD	April 25	531	500	"	25	—					
											June 22	532	500	"	26	—

R—Reaction. RD—Reaction with Dikop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.

TEST.					Result.	TEST.					ult.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1903.		c.c.				1903.		c.c.			
April 8	295	1000	Ord.	9	---	Aug. 21	333	2000	Ord.	13	---
June 3	300	1500	"	10	---	Oct. 9	350	2000	"	15	---
	316	2100	"	11	---						
May 3	300	1000	"	10	---	Aug. 11	338	1900	"	12	---
July 22	316	2000	"	11	---	Oct. 9	352	2000	"	14	---
	335	1400	"	11	---		350	2000	"	15	---
1904.						1906.					
Jan. 20	416	2000	"	20	---	Oct. 15	2199	5	Tzn.	12	---
May 5	446	2000	"	21	---						
	512	2000	"	24	---						
Jan. 20	414	1000	"	19	---	1904.					
Feb. 24	419	2000	"	20	---	May 5	512	2000	Ord.	24	---
	446	1000	"	21	---						
Feb. 3	419	1400	"	20	---	April 9	423	1000	"	22	---
March 20	447	1300	"	22	---	April 26	481	1800	"	23	---
	356	500	"	17	---						
Oct. 1	561	2200	"	30	---						
1904.						April 27	481	1000	"	23	---
Feb. 3	425	700	"	20	---		478	1000	"	23	---
April 9	447	1300	"	22	---						
	423	1600	"	22	---						
April 10	423	1000	"	22	---	June 7	528	1500	"	25	---
April 26	481	1000	"	23	---		531	1500	"	25	---
May 28	385	2500	"	26	---	July 15	538	2300	"	18	---
June 29	520	2000	"	26	---	Sept. 22	610	2000	"	29	---
	406	3500	"	17	---	Oct. 6	623	2000	"	31	---
Mar. 30	467	1500	"	22	---	April 25	456	1400	"	24	---
						May 13	488	1300	"	25	---
Mar. 31	487	3000	"	23	---		387	1500	"	25	---
Oct. 5	623	2200	"	31	---						
Nov. 26	657	1600	"	34	---	1905.					
1905.						June 26	1180	9000	"	51	---
Feb. 24	705	5000	"	40	---						
1906.											
Sept. 1	1965	5	Tzn.	1	---						
1905.						1904.					
Feb. 23	705	750	Ord.	40	---	Aug. 5	581	2000	"	27	---
1904.							585	1000	"	27	---
June 21	529	500	"	26	---	Sept. 9	534	1000	"	27	---
	526	2000	"	27	---		564	1000	"	29	---
July 30	533	2000	"	26	---						

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.				Result.	
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.		Gen.
462 (cont.)						1905. May 16	1064	c.c. 9000	Ord.	46	---
463	1904. Feb. 29	446	Ord.	21	RD	1904. April 25	478	1000	"	23	---
							531	500	"	25	---
						June 6	528	500	"	25	---
464	"	446	"	21	R	1905. May 16	1067	9000	"	46	---
						1904. April 26	481	1000	"	23	---
							528	3000	"	25	---
465	"	446	"	21	RD	June 23	529	3500	"	26	---
						Oct. 10	626	1500	"	31	---
466	"	446	"	21	R	Aug. 31	585	2000	"	27	---
							534	2000	"	27	---
468	"	446	"	21	RD	April 8	423	1500	"	22	---
							481	500	"	23	---
						June 5	478	500	"	23	---
							528	500	"	25	---
							531	500	"	25	---
469	Mar. 19	447	"	22	---	May 19	387	2000	"	25	---
						May 30	385	2200	"	26	---
479	April 5	447	"	22	---	April 25	456	500	"	24	---
							488	1700	"	25	---
						May 14	387	2200	"	25	---
482	"	447	"	22	RD	April 27	478	1400	"	23	---
							481	1500	"	23	---
						June 22	531	2500	"	25	---
							532	2500	"	26	---
485	"	447	"	22	R	Oct. 21	548	10000	"	32	---
						1905. Oct. 14	1379	6000	"	51	---
						Oct. 17	1386	3000	"	50	---
486	April 5	447	"	22	R	1904. Sept. 7	536	3700	"	28	---
492	April 25	423	"	22	R	June 8	528	800	"	25	---
							531	900	"	25	---
						Aug. 1	529	3000	"	26	---
							533	1800	"	26	---

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					
Date of Injection.	Virus.					Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. Aug. 22	1270	c.c. 1500	Ordl.	45	---	1905. Dec. 22	1532	c.c. 3000	Ordl.	60	---
Aug. 23	1277	7500	..	44	---	Dec. 31	1531	2500	..	60	---
1904. June 21	532	500	..	26	---	1904. Aug. 8	1611	3000	..	40	---
July 28	529	500	..	26	---		582	2000	..	27	---
	526	2000	..	27	---		585	1000	..	27	---
	533	1000	..	26	---		580	1000	..	29	---
1905. Aug. 26	1272	9000	..	45	---		561	2000	..	30	---
1904. July 30	533	2000	..	26	---	1906. Sept. 1	1965	5	Tzn.	1	---
Aug. 6	581	2500	..	27	---	Oct. 15	2199	5	..	12	---
Nov. 16	640	4500	..	33	---	Nov. 23	657	2500	Ordl.	34	---
Sept. 14	580	2600	..	29	---						
Sept. 30	561	2700	..	30	---	1905. May 5	1065	9000	..	45	---
Aug. 30	534	2000	..	27	---	Aug. 22	1277	9000	..	44	---
	464	1000	..	22	---						
	580	1000	..	29	---	1904. Aug. 20	393	3000	..	18	---
	564	1000	..	29	---	Sept. 10	536	2500	..	28	---
June 29	406	2000	..	17	---	July 16	538	4000	..	18	---
July 16	538	2300	..	18	---	July 21	610	2200	..	29	---
May 28	385	2500	..	26	---						
	520	2000	..	26	---	1906. Oct. 15	2199	5	Tzn.	12	---
June 29	406	3000	..	17	---	1904. Sept. 29	561	3000	Ordl.	30	---
July 7	536	2000	..	28	---	1905. June 27	1194	8500	..	38	---
Aug. 7	533	2500	..	26	---	Sept. 1	1965	5	Tzn.	1	---
	581	3000	..	27	---	1904. Oct. 7	623	2000	Ordl.	31	---
1905. Feb. 24	705	5000	..	40	---	Aug. 9	582	2000	..	27	---
1906. Sept. 1	1965	5	Tzn.	1	---	Sept. 1	585	1800	..	27	---
1904. Oct. 7	623	2000	Ordl.	31	---	1904. Sept. 16	564	2500	..	29	---
Aug. 9	582	2000	..	27	---	Sept. 23	609	2700	..	30	---
Sept. 1	585	1800	..	27	---						

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Virus.			Date of Injection.		Virus.					
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.		
493	1904. April 25	423	Ord.	22	R	1904. Sept. 23	609	c.c. 3300	Ord.	30	---	
498	"	423	"	22	?	Sept. 8	536	1800	"	28	---	
501	"	423	"	22	RD	May 30 to July	385 406 538	2200 2000 2500	"	26 17 18	---	
509	"	423	"	22	RD	June 8 June 25	528 532	1700 3000	"	18 26	---	
530	Nov. 4	547	"	32	RD	Dec. 3 1905. Oct. 18 1904.	659 1385	5950 9000	"	35 50	---	
417	Feb. 15	419	"	20	?	Aug. 18	586	2000	"	27	---	
418	"	419	"	20	R	"	393	2500	"	18	---	
429	Mar. 7	447	"	22	?	Aug. 20	393	3000	"	18	---	
431	"	447	"	22	R	Aug. 31	585	3000	"	27	---	
539	Nov. 12	547	"	32	R	Dec. 4	645	5350	"	35	---	
552	Nov. 4	547	"	32	R	Dec. 3	645	4900	"	35	---	
553	Nov. 16	640	"	33	?	Dec. 31	694	5000	"	36	---	
554	Nov. 4	547	"	32	R	Dec. 3 1905. Oct. 18 1907. Jan. 5	659 1386 2411	7250 9000 9000	" " OTB LPW	35 50 1	---	
555	Nov. 16	640	"	33	R	1904. Dec. 30	694	1500	Ord.	36	---	
559	Oct. 11	623	"	31	R	Dec. 3	659	6000	"	35	---	
562	Oct. 10	623	"	31	?	Nov. 24	657	3500	"	34	---	
565	Nov. 16	640	"	33	RD	Dec. 31	671	7500	"	37	---	
566	"	640	"	33	R	" 1906. Sept. 20	666 1965	6250 5	" Tzn.	36 1	---	
567	Dec. 2	640	"	33	RD	1905. Jan. 12 Oct. 28 Oct. 31	701 1393 1393	7500 2000 7000	Ord. " "	38 53 53	---	
568	Nov. 16	640	"	33	R	1904. Dec. 31 1905. Oct. 17 Oct. 19	666 1385 1384	7500 6000 3000	" " "	36 50 52	---	
570	Oct. 5	561	"	30	R	1904. Dec. 3 1905. Oct. 18	557 645 1386	3500 5900 8500	" " "	33 35 50	---	

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.						TEST.					
Date of Injection.	Virus.				Result.	Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1904. Oct. 10	623	c.c. 2000	Ord.	30	—						
Oct. 9	626	2500	"	31	—						
Sept. 10	536	2500	"	28	—						
Aug. 1	533	1800	"	26	—	1904. Sept. 16	564	2200	Ord.	29	—
Aug. 9	581	2500	"	27	—	Sept. 23	609	2700	"	30	—
1905. Feb. 24	705	5000	"	40	—	1905. June 27	1181	8500	"	51	—
1906. Oct. 17	2199	5	Tzn.	12	R						
1904. Sept. 23	609	3300	Ord.	30	—	1904. Oct. 6	623	2300	"	31	—
Sept. 10	536	2500	"	28	—						
Sept. 15	564	1000	"	29	—	Oct. 23	547	2000	"	32	—
1905. Feb. 12	705	7000	"	40	—						
"	705	5200	"	40	—						
Jan. 28	711	2750	"	38	—						
Feb. 24	706	5000	"	40	—	1905. June 26	1194	5500	"	38	—
						June 28	1180	3000	"	51	—
1906. Sept. 20	1965	5	Tzn.	1	—	1906. Oct. 15	2086	5	Bul.	5	—
1905. Jan. 29	711	7495	Ord.	38	—						
Feb. 23	706	5000	"	40	—						
1904. Dec. 31	694	5000	"	36	—						
1905. Feb. 25	706	5250	"	40	—	1905. Sept. 5	1279	9000	Ord.	46	—
May 16	1064	8500	"	46	—						
May 30	1069	7000	"	48	—	June 2	1117	2000	"	48	—
Feb. 23	705	1000	"	40	—	June 28	1184	8500	"	51	—
1906. Sept. 20	1965	5	Tzn.	1	—						
1905. Feb. 24	701	3000	Ord.	38	—	June 26	1184	8000	"	51	—
	706	3000	"	40	—	June 28	1194	500	"	38	—
1906. Sept. 1	1965	5	Tzn.	1	—	1906. Oct. 15	2086	5	Bul.	5	—

R—Reaction.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
571	1904. Oct. 28	548	Ord.	32	?	1904. Dec. 24	657	c.c. 2500	Ord.	34	—
572	Nov. 5	547	"	32	R	Dec. 12	703	7250		38	—
						1906. Sept. 20	1965	5	Tzn.	1	—
573	Nov. 3	547	"	32	R	1904. Dec. 12	659	5750	Ord.	35	—
574	Nov. 16	640	"	33	R	Dec. 31	671	7000	"	37	—
						1906. July 17	2058	10	Tzn.	6	RD
576	Dec. 2	640	"	33	RD	1905. Jan. 12	703	7500	Ord.	38	—
						Aug. 11	1869	1	Tzn.	1	—
578	Oct. 20	547	"	32	?	2060	1	Bul.	2	—	
						Jan. 12	703	7500	Ord.	38	—
						1906. Sept. 20	1965	5	Tzn.	1	—
579	"	547	"	32	?	1905. Jan. 12	701	7500	Ord.	38	—
						1906. Sept. 20	1965	5	Tzn.	1	—
583	Nov. 16	640	"	33	RD	1904. Dec. 31	671	7500	Ord.	37	—
584	1905. Jan. 8	694	"	36	R	1905. Feb. 8	747	6000	"	39	—
589	1904. Oct. 20	547	"	32	R	Jan. 13	703	6800	"	38	—
594	Dec. 30	694	"	36	R	1906. July 18	2058	10	Tzn.	6	R
629	Dec. 2	640	"	36	RD	1905. Mar. 21	892	9000	Ord.	41	—
632	"	659	"	35	R	"	707	9500	"	41	—
						1906. Aug. 10	1869	1	Tzn.	1	—
						2060	1	Bul.	2	—	
650	Nov. 16	640	"	33	R	1904. Dec. 31	666	7500	Ord.	36	—
651	"	640	"	33	R	Dec. 30	671	6000	"	37	—
						1906. Sept. 20	1965	20	Tzn.	1	—
654	"	640	"	33	R	1904. Dec. 31	666	7750	Ord.	36	—
						1906. Sept. 20	1965	5	Tzn.	1	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1904. Dec. 31	694	c.c. 6500	Ord.	36	—						
1905. May 29	1070	5000	"	48	—	1905. Sept. 7	1279	9000	Ord.	46	—
June 22	1117	4000	"	48	—						
1905. Feb. 11	705	4750	"	40	—						
May 17	1064	9000	"	46	—	Sept. 5	1278	3000	"	46	—
						Sept. 8	1307	6000	"	47	—
1906. Aug. 12	1996	9000	Tzn.	2	—						
1905. June 2	1070	3000	Ord.	48	—	Sept. 9	1281	9000	"	47	—
	1117	5500	"	48	—						
"	1069	4500	"	48	—	Sept. 8	1281	8000	"	47	—
1906. Oct. 15	2086	5	Bul.	5	RD	Sept. 13	1313	1000	"	47	—
1905. June 5	1158	3000	Ord.	49	—						
June 7	1118	3000	"	48	—	Sept. 27	1319	9000	"	49	—
	1156	2500	"	49	—						
1907. Mar. 15		Relapse	of	Dikkop							
1905. Feb. 23	706	3500	Ord.	40	—						
June 6	1156	9000	"	49	—	"	1319	9000	"	49	—
1906. Aug. 19	2034	9000	Tzn.	3	—						
1905. June 27	1181	9000	Ord.	51	—	Oct. 18	1385	3000	"	50	—
						Oct. 20	1387	6000	"	52	—
1906. Sept. 6	2196	9000	Bul.	5	—						
1905. May 9	1065	3000	Ord.	45	—						
May 16	1067	4500	"	46	—						
May 9	1065	9000	"	45	—	Aug. 23	1271	9000	"	45	—
May 16	1067	8500	"	46	—	Sept. 5	1278	7500	"	46	—
						Sept. 6	1279	1500	"	46	—

RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
660	1904. Dec. 2	659	Ord.	35	RD	1905. Jan. 25	670	c.c. 7500	Ord.	37	—
662	"	659	"	35	R	"	670	7500	"	37	—
663	"	659	"	35	RD	Jan. 24	670	7500	"	37	—
664	"	659	"	35	R	"	670	2750	"	37	—
665	"	659	"	35	RD	Oct. 18	1386	9000	"	50	—
672	Dec. 18	658	"	35	R	Jan. 11	701	4500	"	38	—
681	"	658	"	35	R	Feb. 8	747	1500	"	39	—
696	1905. Jan. 12	701	"	38	R	Jan. 28 1906.	711	7500	"	38	—
699	Jan. 8	666	"	36	R	Oct. 15 1905.	2199	5	Tzn.	12	—
803	Jan. 26	726	"	37	R	Feb. 9 1906.	747	7150	Ord.	39	—
813	Feb. 28	726	"	37	R	Aug. 10 1905.	2060	2	Bul.	2	RD
814	"	726	"	37	R	Mar. 20 1906.	707	6500	Ord.	41	—
816	"	726	"	37	R	Mar. 21 1906.	892	3500	"	41	—
817	"	726	"	37	R	Aug. 10 1905.	2060	2	Bul.	2	RD
818	"	726	"	37	R	May 17	1064	2000	Ord.	46	—
821	"	726	"	37	RD	May 24	1068	8000	"	47	—
822	"	726	"	37	RD	July 3	1193	6500	"	39	—
826	"	726	"	37	R	July 4	1198	2500	"	52	—
828	"	726	"	37	R	July 5	1193	8750	"	39	—
829	"	726	"	37	R	May 23 1906.	1068	9000	"	47	—
822	"	726	"	37	RD	Aug. 2 1905.	1964	10	Bul.	2	—
826	"	726	"	37	R	May 22	1068	4000	Ord.	47	—
828	"	726	"	37	RD	July 4	1198	8500	"	52	—
822	"	726	"	37	RD	May 24	1072	9000	"	47	—
826	"	726	"	37	R	May 22	1072	6000	"	47	—
828	"	726	"	37	R	May 29	1069	3000	"	48	—
829	"	726	"	37	R	July 3	1198	5500	"	52	—
						July 5	1197	3000	"	52	—
						June 5	1118	9000	"	48	—

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. June 7	1156	c.c. 7500	Ord.	49	—	1905. Sept. 29	1368	c.c. 9000	Ord.	49	—
June 5	1158	1500	"	49	—						
June 8	1156	2000	"	49	—						
	1157	5000	"	49	—						
June 6	1158	8500	"	49	—						
Mar. 21	892	7500	"	41	—	June 26	1184	3000	"	51	—
						July 5	1180	500	"	51	—
							1179	5500	"	52	—
1906. Sept. 20	1965	5	Tzn.	1	—	1906. Dec. 30	2476	9000	OTB	1	—
1905. Feb. 12	705	7000	Ord.	40	—						
June 6 1906.	1156	9000	Ord.	49	—	1905. Sept. 28	1368	9000	Ord.	49	—
Aug. 30	2180	9000	Bul.	4	—						
1905. Mar. 27	1180	9000	Ord.	51	—	Oct. 19	1384	9000	"	52	—
1906. Aug. 30	2180	9000	Bul.	4	—						
1905. Aug. 31	1282	6000	Ord.	45	—	1906. Sept. 20	1965	5	Tzn.	1	—
1905. Sept. 1	1275	3000	"	45	—	Oct. 16	2086	5	Bul.	5	RD
Sept. 2 1906.	1282	9000	"	45	—	July 18	2058	10	Tzn.	6	—
Aug. 22	2179	9000	Bul.	3	—						
1905. June 5	1118	5000	Ord.	48	—						
Oct. 20	1387	7000	"	52	—						
Oct. 25	1391	2000	"	52	—						
Sept. 15	1315	7500	"	47	—	Sept. 20	1965	5	"	1	—
Sept. 18	1318	1500	"	47	—						
Oct. 28	1394	9000	"	53	—	Aug. 10	2060	2	Bul.	2	—
						" 31	2180	9000	"	4	—

RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
831	1905. Feb. 28.	726	Ord.	37	RD	1905. July 4	1197	c.c. 7000	Ord.	52	—
						July 5	1193	2000	"	39	—
833	"	726	"	37	R	May 22	1072	2000	"	47	—
834	"	726	"	37	R	July 14	1183	9500	"	53	—
835	"	726	"	37	R	July 4	1197	6000	"	52	—
						July 5	1179	2000	"	52	—
836	"	726	"	37	R	June 9	1157	8500	"	49	—
						July 6	1179	9000	"	52	—
838	"	726	"	37	R	June 9	1157	1000	"	49	—
						June 20	1185	8000	"	50	—
839	"	726	"	37	R	"	1185	9000	"	50	—
841	"	726	"	37	R	July 4	1197	6000	"	52	—
842	"	726	"	37	R	July 6	1179	3000	"	52	—
						June 20	1189	9000	"	50	—
843	"	726	"	37	R	"	1189	8500	"	50	—
844	"	726	"	37	R	"	1190	9000	"	50	—
845	"	726	"	37	R	July 4	1198	6500	"	52	—
						July 6	1193	3000	"	39	—
846	"	726	"	37	R	June 21	1190	9000	"	50	—
847	"	726	"	37	R	July 14	1183	9000	"	53	—
849	"	726	"	37	R	"	1183	7500	"	53	—
						July 17	1186	6000	"	41	—
850	"	726	"	37	RD	July 21	1211	3000	"	41	—
						June 21	1188	9000	"	50	—
851	"	726	"	37	R	July 17	1186	5000	"	41	+
						July 21	1211	4000	"	41	—
852	"	726	"	37	RD	June 20	1188	8500	"	50	—
						June 19	1188	500	"	50	—
853	"	726	"	37	R	June 28	1189	1500	"	50	—
						July 21	1194	7000	"	38	—
854	Mar. 20	726	"	37	R	July 21	1211	3000	"	41	—
						July 28	1199	3000	"	52	—
855	"	726	"	37	R	July 24	1243	3000	"	42	—
						July 24	1199	9000	"	52	—
856	Feb. 28	726	"	37	RD	June 20	1190	3000	"	50	—
						July 5	1179	6000	"	52	—

R—Reaction, RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. Oct. 28	1394	c.c. 8500	Ord.	53	—	1906. Sept. 1	1965	c.c. 5	Tzn.	1	—
						Oct. 15	2086	5	Bul.	5	—
June 6	1158	6500	"	49	—						
Nov. 1	1396	9000	"	53	—	Aug. 10	2060	2	"	2	RD†
Oct. 26	1392	3000	"	52	—						
Oct. 27	1393	6000	"	53	—						
Sept. 28	1319	1000	"	49	—	Sept. 20	1965	5	Tzn.	1	—
Sept. 30	1371	8000	"	49	—						
Oct. 28	1393	3000	"	53	—						
Oct. 31	1395	6000	"	53	—						
Sept. 30	1369	9000	"	49	—	Oct. 15	2199	5	"	12	—
"	1369	8500	"	49	—	Sept. 1	1965	5	"	1	—
Oct. 28	1393	2000	"	53	—						
Nov. 1	1396	6500	"	53	—						
Oct. 2	1371	9000	"	49	—	Sept. 20	1965	5	"	1	—
Nov. 1	1395	9000	"	53	—						
"	1395	3000	"	53	—	Sept. 20	1965	5	"	1	—
Nov. 2	1396	6000	"	53	—	Oct. 15	2086	5	Bul.	5	RD
"	1396	9000	"	53	—	Sept. 1	1965	5	Tzn.	1	—
Nov. 7	1439	9000	"	54	—						
Oct. 20	1387	9000	"	52	—						
Nov. 15	1444	9000	"	56	—	Sept. 1	1965	5	"	1	R
Nov. 1	1395	3000	"	53	—	Oct. 17	2199	5	"	12	R
Nov. 6	1437	6000	"	54	—	Nov. 11.	1964	2	Bul.	2	—
Oct. 21	1384	9000	"	52	—	Sept. 20	1965	5	Tzn.	1	Tzn.
						Oct. 15	2086	5	Bul.	5	RD†

R—Reaction. RD†—Reaction with Dikk and died.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.				Result.	
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.		Gen.
860	1905. Feb. 28.	726	Ord.	37	R	1905. June 20 June 27 June 28	1185 1181 1180	c.c. 1500 5000 2500	Ord. " "	50 51 51	— — —
861	"	726	"	37	R	July 17 July 21	1186 1211	5000 3500	" "	41 41	— —
862	"	726	"	37	R	June 20 June 28	1189 1180	6500 2500	" "	50 51	— —
883	Mar. 20	726	"	37	R	July 25	1199	9000	"	52	—
884	"	726	"	37	R	July 24 July 28	1199 1243	2500 6500	" "	52 42	— —
885	"	726	"	37	RD	July 29	1243	9000	"	42	—
886	"	726	"	37	R	May 2	993	9000	"	45	—
887	"	726	"	37	RD	1906. July 18 1905. July 29 July 31	2058 1243 1187	10 3000 6000	Tzn. Ord. "	6 42 42	— — —
888	"	727	"	5	R	July 29 Aug. 1	1243 1196	3000 6000	" "	42 42	— —
889	"	727	"	5	R	"	1187	9000	"	42	—
891	"	726	"	37	R	Aug. 1 Aug. 9	1196 1192	6000 3000	" "	42 43	— —
893	"	726	"	37	RD	Aug. 1	1196	9000	"	42	—
894	"	726	"	37	RD	"	1187	6000	"	42	—
895	"	726	"	37	R	Aug. 8 Aug. 1 Aug. 9	1203 1196 1200	3000 6000 3000	" " "	43 42 43	— — —
896	"	726	"	37	R	"	1192	9000	"	43	—
897	"	726	"	37	R	"	1203	9000	"	43	—
898	"	726	"	37	R	Aug. 10	1200	9000	"	43	—
901	"	726	"	37	R	Aug. 9	1192	9000	"	43	—
903	"	726	"	37	R	Aug. 10	1203	9000	"	43	—
904	"	726	"	37	R	"	1203	9000	"	43	—
905	"	726	"	37	RD	Aug. 14 Aug. 15	1201 1266	3000 6000	" "	44 44	— —
906	"	726	"	37	R	Aug. 12 Aug. 15	1201 1266	6000 3000	" "	44 44	— —
907	"	726	"	37	R	Oct. 7	1373	9000	"	50	—
908	"	726	"	37	R	Oct. 25	1390	9000	"	52	—
909	"	727	"	37	R	Sept. 17	1315	9000	"	47	—

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905.		c.c.					c.c.				
Oct. 20	1384	6000	Ord.	52	—						
Oct. 24	1390	3000	"	52	—						
Nov. 7	1439	9000	"	54	—	1906.					
						Sept. 20	1965	5	Tzn.	1	—
Oct. 21	1384	3000	"	52	—	"	1965	5	"	1	—
Oct. 24	1391	6000	"	52	—						
Nov. 7	1437	9000	"	54	—						
Nov. 10	1440	4500	"	55	—						
Nov. 14	1443	4500	"	56	—						
Nov. 15	1443	9000	"	56	—	Aug. 10	1869	1	"	1	R
							2060	1	Bul.	2	R
Aug. 10	1192	3000	"	43	—	1905.					
Aug. 12	1201	6000	"	44	—	Nov. 17	1444	6000	Ord.	56	—
1906.						Nov. 28	1490	3000	"	57	—
Aug. 12	1996	9000	Tzn.	2	—						
1905.						1906.					
Nov. 7	1437	6000	Ord.	54	—	Sept. 20	1965	5	Tzn.	1	—
Nov. 8	1440	3000	"	55	—	"	1965	5	"	1	—
Nov. 7	1437	3000	"	54	—						
Nov. 10	1440	6000	"	55	—						
Nov. 15	1444	9000	"	55	—	"	1965	5	"	1	—
						Oct. 15	2086	5	Bul.	5	RD
Nov. 15	1443	6000	"	56	—	Sept. 20	1965	5	Tzn.	1	—
Nov. 16	1444	3000	"	56	—						
"	1443	9000	"	56	—	Oct. 15	2199	5	"	12	—
Nov. 7	1439	9000	"	54	—	Sept. 20	1965	5	"	1	—
Nov. 16	1444	9000	"	56	—						
Nov. 19	1444	9000	"	56	—						
Nov. 17	1443	3000	"	56	—						
Nov. 29	1490	6000	"	57	—						
Dec. 6	1491	9000	"	58	—	"	1965	5	"	1	—
Nov. 17	1443	3000	"	56	—	"	1965	5	"	1	—
Dec. 5	1490	3000	"	57	—						
	1491	3000	"	58	—						
Dec. 12	1530	9000	"	59	—	"	1965	5	"	1	—
Dec. 13	1530	9000	"	59	—	Sept. 1	1965	5	"	1	RD
Dec. 12	1530	9000	"	59	—	Sept. 20	1965	5	"	1	—
1906.											
Mar. 19	1677	3000	"	61	—	Sept. 1	1965	5	"	1	—
Mar. 24	1883	6000	Dalc	2	—						
Mar. 15	1779	9000	Ord.	61	—	Sept. 20	1965	5	"	1	—

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
911	1905. Mar. 20	726	Ord.	37	R	1905. April 18	1051	c.c. 9000	Ord.	43	—
					R	1906. Sept. 20	1965	5	Tzn.	1	—
912	"	726	"	37	R	"	1965	5	"	1	—
913	"	726	"	37	R	1905. Aug. 14	1201	3000	Ord.	44	—
914	"	726	"	37	R	Aug. 16	1266	6000	"	44	—
					R	Sept. 15	1315	6000	"	47	—
915	"	726	"	37	R	Sept. 18	1318	3000	"	47	—
					R	Oct. 9	1374	9000	"	50	—
916	"	726	"	37	R	1906. July 18	2058	10	Tzn.	6	R
					RD	1905. Sept. 18	1318	9000	Ord.	47	—
917	"	726	"	37	R	Sept. 18	1052	9000	"	43	—
918	"	726	"	37	R	April 18	1052	9000	"	43	—
919	"	727	"	5	R	Sept. 19	1318	9000	"	47	—
920	"	727	"	5	R	April 18	1052	9000	"	43	—
922	"	726	"	37	R	Sept. 15	1314	3000	"	47	—
					R	Sept. 19	1316	6000	"	48	—
923	"	726	"	37	R	Oct. 7	1373	9000	"	50	—
924	"	726	"	37	R	Sept. 15	1314	2000	"	47	—
					RD	Sept. 20	1317	7000	"	48	—
925	"	726	"	37	R	1906. Oct. 15	2199	5	Tzn.	12	—
926	"	726	"	37	RD	1905. Sept. 21	1316	9000	Ord.	48	—
927	"	726	"	37	R	Sept. 20	1316	8500	"	48	—
928	"	726	"	37	R	Aug. 19	1269	9000	"	43	—
929	"	727	"	5	R	May 2	970	9000	"	45	—
930	"	727	"	5	R	Sept. 20	1317	9000	"	48	—
931	"	726	"	37	R	April 25	1048	6000	"	44	—
					R	April 30	970	3500	"	45	—
					R	1906. Oct. 15	2199	5	Tzn.	12	—
932	"	726	"	37	R	1905. May 2	970	7000	Ord.	45	—
933	"	726	"	37	R	Sept. 21	1317	9000	"	48	—
935	"	726	"	37	R	Aug. 18	1268	6000	"	43	—
936	"	726	"	37	RD	Aug. 19	1269	3000	"	43	—
937	"	726	"	37	RD	"	1269	8500	"	43	—
					RD	Sept. 21	1316	9000	"	48	—
938	"	726	"	37	R	Oct. 24	1391	9000	"	52	—
939	"	727	"	5	RD	Aug. 22	1270	9000	"	45	—

R—Reaction, RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. Aug. 10	1200	c.c. 9000	Ord.	43	—	1906. Jan. 2	1611	c.c. 9000	Ord.	40	—
1906. Oct. 15	2086	5	Bul.	5	R						
1905. Dec. 20	1546	7000	Ord.	60	—	Sept. 20	1965	5	Tzn.	1	—
1906. Mar. 14	1779	9000	"	61	—	"	1965	5	"	1	—
Mar. 16	1779	9000	"	61	—	Oct. 15	2199	5	"	12	—
"	1786	3000	"	61	—	Sept. 20	1965	5	"	1	—
Mar. 18	1677	6000	"	61	—	Oct. 15	2199	5	"	12	—
Mar. 19	1677	3000	"	61	—	"	2199	5	"	12	—
Mar. 24	1883	6000	Dale	2	—						
Mar. 17	1677	9000	Ord.	61	—	"	2199	5	"	12	—
Mar. 16	1786	9000	"	61	—	"	2199	5	"	12	—
Mar. 17	1677	9000	"	61	—	"	2199	5	"	12	—
1905. Aug. 19	1268	9000	"	43	—						
1906. Mar. 25	1883	5500	Dale	2	—	"	2199	5	"	12	—
Mar. 26	1885	3500	"	2	—						
1905. Aug. 19	1268	9000	Ord.	43	—	Feb. 1	1647	9000	Ord.	38	—
1907. Jan. 5	2411	9000	OTB LPW	1	—						
1905. Aug. 19	1269	9000	Ord.	43	—						
1906. Mar. 25	1883	6000	Dale	2	—						
Mar. 26	1885	3000	"	2	—						
Jan. 17	1489	9000	Ord.	61	—	Oct. 15	2199	5	Tzn.	12	—
"	1489	9000	"	61	—	"	2199	5	"	12	—
Mar. 27	1883	4500	Dale	2	—	Sept. 1	1965	5	"	1	—
April 13	1896	3500	Edgar	1	—						
1905. Dec. 22	1531	9000	Ord.	60	—						

R—Reaction.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
940	1905. Mar. 20	727	Ord.	5	RD	1905. Sept. 23	1365	c.c. 9000	Ord.	48	—
941	"	726	"	37	R	"	1366	9000	"	48	—
942	April 11	726	"	37	R	1906. July 18	2058	10	Tzn.	6	R
945	"	726	"	37	R	1905. Aug. 23	1271	2500	Ord.	45	—
946	"	726	"	37	R	Aug. 25	1269	6000	"	43	—
						Oct. 25	1391	6000	"	52	—
						Oct. 26	1392	3000	"	52	—
947	"	726	"	37	R	Aug. 23	1270	6000	"	45	—
						Aug. 25	1267	3000.	"	45	—
948	"	726	"	37	R	Oct. 25	1390	9000	"	52	—
949	"	726	"	37	R	Nov. 30	1490	9000	"	57	—
950	"	726	"	37	R	Aug. 22	1270	9000	"	45	—
952	"	726	"	37	R	"	1271	9000	"	45	—
955	"	726	"	37	R	Oct. 9	1374	9000	"	50	—
956	"	726	"	37	R	Sept. 23	1365	9000	"	48	—
957	"	726	"	37	RD	May 16 1906.	1065	3	"	45	—
						Feb. 1	1647	2500	"	38	—
						Feb. 6	1770	6000	"	63	—
958	"	726	"	37	R	1905. April 23	1277	9000	"	44	—
959	"	726	"	37	R	Aug. 22	1271	9000	"	45	—
960	"	726	"	37	R	Oct. 9	1373	7000	"	50	—
						Oct. 11	1375	2000	"	51	—
962	"	726	"	37	R	Aug. 30	1273	9000	"	45	—
963	"	726	"	37	RD	"	1273	9000	"	45	—
964	"	726	"	37	R	Sept. 23	1366	9000	"	48	—
965	"	726	"	37	R	May 16 Sept. 7 Sept. 13	1065 1769 1771	3 7500 1500	" " "	45 63 62	— — —
967	"	726	"	37	R	Aug. 31	1274	9000	"	45	—
968	"	726	"	37	R	Aug. 25	1267	6000	"	45	—
						Aug. 26	1272	3000	"	45	—
969	"	726	"	37	R	Sept. 1	1275	9000	"	45	—
971	"	726	"	37	RD	Sept. 30	1371	9000	"	49	—
972	"	726	"	37	R	Sept. 23	1365	8500	"	48	—
973	"	726	"	37	RD	May 16 1906.	1065	3	"	45	—
						Feb. 14	1771	9000	"	62	—
974	"	726	"	37	R	1905. Sept. 23 Sept. 26	1366 1365	3000 6000	" "	48 48	— —

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Date of Injection.	TEST.				Result.	Date of Injection.	TEST.				Result.
	Virus.						Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906.		c.c.				1906.		c.c.			
Jan. 18	1489	9000	Ord.	61	—	Oct. 15	2199	5	Tzn.	12	—
Jan. 18	1489	6000	"	61	—	"	2199	5	"	12	—
Feb. 1	1709	1500	"	39	—	"					—
Aug. 2	1964	10	Bul.	2	R	Aug. 24	2179	9000	Bul.	3	—
Feb. 1	1647	8000	Ord.	38	—	Oct. 15	2199	5	Tzn.	12	—
Sept. 1	1965	5	Tzn.	1	—						—
1905.											
Nov. 30	1490	9000	Ord.	57	—	"	2199	5	"	12	R†
1906.											
April 17	1896	3000	Edgar	1	—	Sept. 1	1965	5	"	1	—
July 18	2058	10	Tzn.	6	R	Aug. 15	1995	9000	"	2	—
Jan. 15	1489	3000	Ord.	61	—	Oct. 15	2199	5	"	12	—
"	1489	9000	"	61	—	"	2199	5	"	12	—
Mar. 27	1883	2500	Dale	2	—	"	2199	5	"	12	—
Mar. 28	1885	6000	"	2	—						
1905.						1905.					
June 23	726	5	Ord.	37	—	Aug. 31	1273	3000	Ord.	45	—
1906.							1276	6000	"	45	—
Oct. 15	2199	5	Tzn.	12	—						
1905.						1906.					
Dec. 22	1532	6000	Ord.	60	—	Oct. 15	2199	5	Tzn.	12	—
Dec. 31	1611	3000	"	40	—						
1906.											
Mar. 16	1786	9000	"	61	—	"	2199	5	"	12	—
Feb. 5	1769	9000	"	63	—	"	2199	5	"	12	—
Feb. 6	1770	9000	"	63	—	"	2199	5	"	12	—
Mar. 28	1885	8000	Dale	2	—	"	2199	5	"	12	—
1905.						1905.					
June 23	726	5	Ord.	37	—	Aug. 31	1274	9000	Ord.	45	—
1906.											
Oct. 15	2199	5	Tzn.	12	—						
1906.						1906.					
Feb. 7	1770	9000	Ord.	63	—	Oct. 15	2199	5	Tzn.	12	—
Feb. 1	1709	9000	"	39	—	"	2199	5	"	12	—
Feb. 7	1770	9000	"	63	—	"	2199	5	"	12	—
April 14	1896	9000	Edgar	1	—	"	2199	5	"	12	—
1905.						1905.					
June 23	726	5	Ord.	37	—	Sept. 2	1282	3000	Ord.	45	—
1906.						Sept. 5	1278	6000	"	46	—
Oct. 15	2199	5	Tzn.	12	—						
"	2199	5	"	12	—						

R—Reaction. R†—Reaction and Died.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
975	1905. April 11	726	Ord.	37	R	1905. Sept. 1	1275	c.c. 9000	Ord.	45	—
976	"	726	"	37	R	Dec. 6	1492	9000	"	58	—
977	"	726	"	37	R	Nov. 30	1490	9000	"	57	—
979	"	726	"	37	RD	Sept. 26	1365	9000	"	48	—
980	"	726	"	37	RD	Oct. 9	1375	9000	"	51	—
981	"	726	"	37	R	Aug. 26	1272	9000	"	45	—
982	"	726	"	37	R	Sept. 1	1276	9000	"	45	—
983	"	726	"	37	R	Sept. 26	1365	9000	"	48	—
984	"	726	"	37	R	Aug. 30	1272	6000	"	45	—
							1273	3000	"	45	—
985	"	726	"	37	R	Sept. 30	1368	9000	"	49	—
987	"	726	"	37	R	Aug. 26	1267	9000	"	45	—
						1906. Dec. 30	2477	9000	OTB LPW	1	—
988	"	726	"	37	RD	1905. Aug. 31	1274	3000	Ord.	45	—
						Sept. 1	1282	5500	"	45	—
989	"	726	"	37	R	Aug. 31	1273	3000	"	45	—
						Sept. 5	1279	6000	"	46	—
990	"	726	"	37	R	Oct. 12	1375	9000	"	51	—
						1906. Aug. 15	1995	9000	Tzn.	2	—
991	"	726	"	37	RD	1905. Dec. 6	1492	9000	Ord.	58	—
						1906. Nov. 11	1964	2	Bul.	2	—
992	"	726	"	37	R	1905. Oct. 25	1391	4500	Ord.	52	—
						Oct. 26	1393	4000	"	53	—
994	"	726	"	37	R	Sept. 28	1319	3000	"	49	—
995	"	726	"	37	R	Sept. 2	1276	3000	"	45	—
						Sept. 5	1280	6000	"	46	—
						1906. July 18	2058	10	Tzn.	6	R
996	"	726	"	37	R	1905. Sept. 1	1276	9000	Ord.	45	—
997	"	726	"	37	R	Sept. 5	1276	3000	"	45	—
						1906. Aug. 18	1280	6000	"	46	—
						1905. Aug. 18	2034	9000	Tzn.	3	—
999	"	726	"	37	R	1905. Sept. 2	1275	6000	Ord.	45	—
						Sept. 5	1278	3000	"	46	—
1000	"	726	"	37	R	1906. Jan. 2	1611	9000	"	40	—
1003	"	726	"	37	R	1905. Oct. 27	1393	9000	"	53	—
1004	"	726	"	37	R	Sept. 9	1307	9000	"	47	—
						1906. Sept. 20	1965	5	Tzn.	1	—

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906. Mar. 6	1778	c.c. 2000	Ord.	60	—						
July 18	2058	10	Tzn.	6	R	1906. Aug. 13	1996	9000	Tzn.	2	—
Oct. 25	2199	5	"	12	—	Nov. 11	1959	2	Bul.	3	—
April 15	1896	8500	Edgar	1	—	Aug. 10	1869	2	Tzn.	1	—
Feb. 1	1709	6000	Ord.	39	—	Aug. 10	2060	2	Bul.	2	—
Feb. 5	1769	3000	"	63	—	Oct. 15	2199	5	Tzn.	12	—
Feb. 14	1771	9000	"	62	—	"	2199	5	"	12	—
April 15 1905.	1897	9000	Dale	3	—	"	2199	5	"	12	—
Dec. 23	1532	6000	Ord.	60	—	"	2199	5	"	12	—
"	1351	3000	"	38	—						
1906. Feb. 14	1771	9000	"	62	—	"	2199	5	"	12	—
Feb. 15	1771	6000	"	62	—	"	2199	5	"	12	—
Feb. 17	1650	3000	"	62	—						
April 15	1897	9000	Dale	3	—	July 18	2058	10	"	6	—
1905. Dec. 22	1532	3000	Ord.	60	—	Oct. 15	2199	5	"	12	—
1906. Aug. 10	2060	2	Bul.	2	—	Sept. 6	2196	9000	Bul.	5	—
Feb. 15	1771	3000	Ord.	62	—	Feb. 27	1789	3000	Ord.	64	—
Feb. 17	1650	3000	"	62	—						
Aug. 2	1964	10	Bul.	2	—	Aug. 23	2179	9000	Bul.	3	—
Feb. 28	1789	9000	Ord.	64	—	Oct. 15	2199	5	Tzn.	12	—
"	1789	9000	"	64	—	July 18	2058	10	"	6	—
"	1789	5500	"	64	—	Oct. 15	2199	5	"	12	—
Mar. 7	1778	3000	"	60	—						
Mar. 18	1677	6000	"	61	—	"	2199	5	"	12	—
Mar. 24	1883	3000	Dale	2	—						
Sept. 20	1965	5	Tzn.	1	—						
Mar. 27	1885	6000	Dale	2	—	April 11	1895	3000	Dale	3	—
Oct. 15	2086	5	Bul.	5	R	Nov. 11	1964	2	Bul.	2	—

R—Reaction.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.				Result.	TEST.					Result.
	Date of Injection.	Virus.				Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qn.	Orig.	Gen.	
1008	1905. April 11	726	Ord.	37	RD	1905. Oct. 13	1376	9000	Ord.	51	—
1010	"	726	"	37	RD	Sept. 8	1281	3000	"	47	—
						Sept. 10	1307	3000	"	47	—
						" 12	1313	3000	"	47	—
1012	"	726	"	37	RD	Oct. 2	1371	4500	"	49	—
						Oct. 5	1370	4500	"	49	—
1013	"	726	"	37	R	Oct. 25	1392	6000	"	52	—
						Oct. 27	1393	3000	"	53	—
1014	"	726	"	37	R	Oct. 12	1377	8500	"	51	—
1015	"	726	"	37	RD	Oct. 2	1369	3000	"	49	—
						Oct. 6	1370	5500	"	49	—
1016	"	726	"	37	R	Dec. 7	1491	9000	"	58	—
1018	"	726	"	37	R	Sept. 12	1312	9000	"	47	—
1020	"	726	"	37	RD	Sept. 13	1312	9000	"	47	—
1021	"	726	"	37	R	"	1313	9000	"	47	—
1022	"	726	"	87	R	Sept. 12	1314	9000	"	47	—
1023	"	726	"	37	R	Dec. 7	1492	8500	"	58	—
1024	"	726	"	37	R	Sept. 13	1313	9000	"	47	—
1025	"	726	"	37	R	Oct. 26	1392	3000	"	52	—
						Oct. 27	1394	6000	"	53	—
1026	"	726	"	37	R	Sept. 13	1312	9000	"	47	—
1027	"	726	"	37	R	Oct. 13	1376	9000	"	51	—
1028	"	726	"	37	RD	1906. June 23	1964	8000	Bul.	2	RD†
						1905. Oct. 4	1370	2500	Ord.	49	—
1029	"	726	"	37	R	Oct. 6	1372	5000	"	49	—
1030	"	726	"	37	R	Oct. 13	1377	9000	"	51	—
1031	"	726	"	37	R	1906. June 23	1964	8500	Bul.	2	RD†
						1905. Oct. 6	1372	6000	Ord.	49	—
1034	"	726	"	37	R	"	1370	1000	"	49	—
1035	"	726	"	37	R	"	"	"	"	"	—
1036	"	726	"	37	R	Oct. 13	1375	9000	"	51	—
1037	"	726	"	37	R	"	1375	9000	"	51	—
1038	"	726	"	37	R	Oct. 12	1377	3500	"	51	—
						Oct. 14	1378	5500	"	51	—
1039	"	726	"	37	R	"	1376	3500	"	51	—
						Oct. 15	1378	3000	"	51	—
						"	1379	3000	"	51	—
1040	"	726	"	37	R	Sept 12	1314	9000	"	47	—
1041	"	726	"	37	R	Oct. 14	1378	9000	"	51	—
1042	"	726	"	37	R	"	1379	9000	"	51	—
1043	"	726	"	37	R	"	1379	8500	"	51	—
1044	"	726	"	37	RD	Sept. 13	1314	6000	"	47	—
						"	1313	3000	"	47	—
						1906. Sept. 5	2196	1000	Bul.	5	—

R—Reaction. RD—Reaction with Dikkop. RD†—Reaction with Dikkop and died.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					
Date of Injection.	Virus.					Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906.		c.c.					c.c.				
Sept. 1	1965	5	Tzn.	1	—	1906.					
Mar. 27	1885	3000	Dale	2	—	April 13	1896	6000	Edgar	1	
Sept. 1	1965	5	Tzn.	1	—	Oct. 15	2199	5	Tzn.	12	
Sept. 20	1965	5	"	1	—	Nov. 11	1964	2	Bul.	2	
Oct. 15	2199	5	"	12	—	Nov. 11	1959	2	"	3	
Sept. 20	1965	5	"	1	—	Sept. 6	2196	8500	Tzn.	5	
Aug. 10	2060	2	Bul.	2	R	Sept. 20	1965	5	"	1	
April 12	1895	6000	Dale	3	—	Sept. 1	1965	5	"	1	
April 13	1896	3000	Edgar	1	—	Nov. 11	1959	2	Bul.	3	
April 17	1836	3000	"	1	—						
Sept. 20	1965	5	Tzn.	1	—						
Oct. 15	2199	5	"	12	—						
"	2199	5	"	12	—						
Aug. 10	1869	1	"	1	—						
"	2060	1	Bul.	2	—						
Oct. 15	2199	5	Tzn.	12	—						
Sept. 1	1965	5	"	1	—						
1905.											
Oct. 11	1376	1500	Ord.	51	—	Aug. 10	1869	1	Tzn.	1	
							2060	1	Bul.	2	
										R	
										R	
Oct. 11	1376	3000	"	51	—						
Oct. 13	1376	8000	"	51	—	Sept. 1	1965	5	Tzn.	1	
1906.						Nov. 11	1959	2	Bul.	3	
Oct. 15	2199	5	Tzn.	12	—						
Sept. 1	1965	5	"	1	—						
"	1965	5	"	1	—						
Sept. 20	1965	5	"	1	—	"	1964	5	"	2	
										RD†	
Sept. 1	1965	5	"	1	R	Oct. 15	2086	5	"	5	
July 18	2058	10	"	6	R	Aug. 2	1964	10	"	2	
										R	
Sept. 13	2266	8000	Bul.	3	—					?	

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop. RD†—Reaction with Dikkop and died.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Virus.			Date of Injection.		Virus.					
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.		
1045	1905. April 11	726	Orl.	37	R	1905. Dec. 7	1491	12000	Orl.	58	—	
1179	June 30	1180	"	51	R	1906. Oct. 15	2199	5	Tzn.	12	—	
1195	"	1180	"	51	R	"	2199	5	"	12	—	
1212	July 14	726	"	37	R	1905. Sept. 6	1280	9000	Orl.	46	—	
1213	"	726	"	37	R	"	1280	3000	"	46	—	
						Sept. 11	1281	3000	"	47	—	
							1312	3000	"	47	—	
1407	Oct. 20	726	"	37	RD	Dec. 17	1492	6000	"	58	—	
						Dec. 18	1546	3000	"	60	—	
1422	Nov. 17	726	"	37	R	1906. Oct. 15	2199	5	Tzn.	12	—	
1549	Dec. 19	726	"	37	RD	"	2199	5	"	12	—	
1554	"	726	"	37	RD	April 3	1785	20	Turn- bull	1	—	
1561	"	726	"	37	R	Feb. 20	1508	10	Orl.	38	—	
1566	"	726	"	37	RD	"	1506	10	"	39	—	
1624	"	726	"	37	R	April 3	1785	20	Turn- bull	1	—	
1678	1906. Jan. 11	1529	"	59	R	Feb. 1	1540	10	Orl.	60	—	
1680	"	1529	"	59	R	"	1540	20	"	60	—	
1681	"	726	"	37	R	Feb. 8	1611	10	"	40	—	
1682	"	726	"	37	R	Feb. 1	1540	20	"	60	—	
1683	"	726	"	37	R	Feb. 8	1542	10	"	61	—	
1684	"	1529	"	59	R	"	1493	10	"	58	—	
1686	"	726	"	37	R	Feb. 1	1540	20	"	60	—	
1688	"	726	"	37	R	Feb. 8	1529	10	"	59	—	
1689	"	1529	"	59	R	"	1529	10	"	59	—	
1691	"	726	"	37	R	"	1493	10	"	58	—	
1692	"	726	"	37	R	"	1471	10	"	57	—	
1693	"	1529	"	59	R	Feb. 1	1540	10	"	60	—	
1694	"	726	"	37	R	Feb. 8	1542	10	"	61	—	
1696	"	726	"	37	R	"	1611	10	"	40	—	
1697	"	726	"	37	R	"	1471	10	"	57	—	
1698	"	726	"	37	R	"	1471	10	"	57	—	
1699	"	726	"	37	R	"	1493	10	"	58	—	
1701	"	1529	"	59	R	"	1542	10	"	61	—	
1702	"	1529	"	59	R	Feb. 1	1540	10	"	60	—	
1703	"	726	"	37	R	Feb. 8	1493	10	"	58	—	
1704	"	1529	"	59	R	"	1611	10	"	40	—	
1706	"	726	"	37	R	"	1529	10	"	59	—	
1707	"	726	"	37	R	Feb. 1	1540	20	"	40	—	
1711	"	726	"	37	R	Feb. 6	726	2	"	37	—	
1713	"	726	"	37	R	"	726	2	"	37	—	
1933	May 16	1863	"	61	R	June 5	1785	10	Turn- bull	1	—	
1934	"	1863	"	61	R	"	1785	10	"	1	—	

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.						TEST.					
Date of Injection.	Virus.				Result.	Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906.		c.c.									
Mar. 14	1779	9000	Ord.	61	—	1906.					
Mar. 6	1788	9000	Dale	1	—	Sept. 20	1965	5	Tzn.	1	—
						"	1965	5	"	1	—
Oct. 15	2199	5	Tzn.	12	—						
April 3	1785	20	Turn-bull	1	—						
Oct. 15	2199	5	Tzn.	12	—						
Oct. 15	2199	5	"	12	—	Dec. 30	2477	9000	OTB LPW	1	—
Oct. 15	2199	5	"	12	—						

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

Mule No.	IMMUNISATION.					TEST.					Result.
	Date of Injection.	Virus.			Result.	Date of Injection.	Virus.				
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1986	1906. May 16.	1863	Ord.	61	R	1906. June 5	1785	c.c. 10	Turn- bull	1	—
1987	"	1863	"	61	R	"	1785	10	"	1	—
2525	1907. Jan. 12	2287	"	38	R	1907. Feb. 21	2268	2	Tzn.	1	R
2528	"	2287	"	38	RD	"	1954	2	Bul.	1	RD
2529	"	2287	"	38	RD	"	2268	2	Tzn.	1	R
2532	"	2287	"	38	R	"	1954	2	Bul.	1	RD
2566	Jan. 8	2407	"	38	R	Jan. 22	2407	2	Ord.	38	—
2567	"	2407	"	38	?	"	2407	2	"	38	—
2568	"	2407	"	38	R	"	2407	2	"	38	—
2569	"	2407	"	38	R	"	2407	2	"	38	—
2570	"	2407	"	38	R	"	2407	2	"	38	—
2571	"	2407	"	38	R	"	2407	2	"	38	—
2572	"	2407	"	38	R	"	2407	2	"	38	—
2573	"	2407	"	38	R	"	2407	2	"	38	—
2574	"	2407	"	38	RD	"	2407	2	"	38	—
2575	"	2407	"	38	?	"	2407	2	"	38	—
2576	"	2407	"	38	R	"	2407	2	"	38	—
2577	"	2407	"	38	R	"	2407	2	"	38	—
1548	1905. Dec. 19	1427	"	38	R	1906. Feb. 20	1506	10	"	39	—
1551	"	1427	"	38	R	Jan. 6	1611	20	"	40	—
1636	1906. Jan. 11	1427	"	38	R	Feb. 1	1540	20	"	60	—
1637	"	1427	"	38	R	Feb. 8	1529	10	"	59	—
1685	"	1427	"	38	R	"	1542	10	"	61	—
1695	"	1427	"	38	RD	"	1471	10	"	57	—
1700	"	1427	"	38	R	Feb. 1	1540	10	"	60	—
1550	1905. Dec. 19	1487	"	1	R	1906. Feb. 20	1506	10	"	39	—
1567	"	1487	"	1	R	Jan. 6	1611	20	"	40	—
1616	"	*	"	1	R	Feb. 20	726	10	"	37	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.

RD†—Reaction with Dikkop and Died.

* *N.B.*—Virus 1427, 1487. See note on page 91.

IMMUNISATION OF MULES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.				
Date of Injection.	Virus.					Date of Injection.	Virus.			
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.
1907. Mar. 13 : : :	1954 2268 1954	c.c. 2 2 2	Bul. Tzn. Bul.	1 1 1	R | .					
1906. Feb. 20	1506	10	Ord.	39	.					
Feb. 20	1506	10	Ord.	39	—					

R—Reaction.

ANALYSIS FROM PRECEDING TABLES.

295 mules immunised with Ordinary virus were hyperimmunised or tested as follows :—

- 37 mules, once hyperimmunised with O : No reaction.
- 41 „ twice „ „ : „
- 13 „ three times „ „ : „
- 4 „ four „ „ „ : „
- 2 „ five „ „ „ : „
- 15 „ once hyperimmunised with O and tested with Tzaneen :
No reaction.
- 50 mules, twice hyperimmunised with O and tested with Tzaneen :
1 reaction ; 3 reactions and dikkop ; 1 death.
- 8 mules, three times hyperimmunised with O and tested with
Tzaneen : No reaction.
- 6 mules, four times hyperimmunised with O and tested with
Tzaneen : 1 reaction.
- 1 mule, five times hyperimmunised with O and tested with Tzaneen :
No reaction.
- 2 mules hyperimmunised with O : No reaction ; tested with
Tzaneen : both reactions ; and thirdly, hyperimmunised with
Tzaneen : no reaction.
- 1 mule, twice hyperimmunised with O, then tested with Tzaneen,
gave no reaction.
- 2 mules, thrice hyperimmunised with O, then tested with Tzaneen
and thirdly with Tzaneen : 1 mule had reaction and dikkop
on the second test.
- 1 mule, twice hyperimmunised with O, and tested with Bulawayo,
had reaction, dikkop, and died.
- 2 mules, hyperimmunised with O, then tested with Bulawayo,
and thirdly hyperimmunised with Bulawayo : 1 mule had a
reaction on the second test.
- 1 mule, twice hyperimmunised with O, then tested with Bulawayo,
and thirdly hyperimmunised with Bulawayo, gave no reaction

- 2 mules, thrice hyperimmunised with O, then tested with Bulawayo, and thirdly hyperimmunised with Bulawayo: Both reaction and dikkop on the second test.
- 2 mules, twice hyperimmunised with O and tested with $\left. \begin{array}{l} \text{Tzaneen} \\ \text{Bulawayo} \end{array} \right\}$: Both reacted.
- 2 mules, thrice hyperimmunised with O and tested with $\left. \begin{array}{l} \text{Tz.} \\ \text{Bul.} \end{array} \right\}$: No reaction.
- 7 mules, first hyperimmunised with O, secondly tested with Tzaneen, and thirdly with Bulawayo: 1 mule died with the third test; 1 mule had reactions with the second and third test.
- 7 mules, twice hyperimmunised with O, secondly tested with Tzaneen, and thirdly with Bulawayo: 1 reaction with second test, 3 reactions and dikkop with the third test, and 1 death with the third test.
- 2 mules, thrice hyperimmunised with O, secondly tested with Tzaneen, and thirdly with Bulawayo: 1 reaction with the third test.
- 1 mule, hyperimmunised with O, secondly tested with Tzaneen, thirdly tested with Bulawayo, and fourthly hyperimmunised with Bulawayo, had a distinct reaction with the second and doubtful reaction with the third test.
- 2 mules, twice hyperimmunised with O, secondly tested with Tzaneen, thirdly with Bulawayo, and fourthly hyperimmunised with Bulawayo: 1 reaction with the second test.
- 1 mule, four times hyperimmunised with O, then tested with $\left. \begin{array}{l} \text{Tz.} \\ \text{Bul.} \end{array} \right\}$ and thirdly with Bulawayo, gave no reaction.
- 1 mule, four times hyperimmunised with O, secondly tested with Tzaneen, and thirdly with OTB: No reaction.
- 2 mules, twice hyperimmunised with O, secondly tested with Tzaneen, and thirdly hyperimmunised with OTBLPW: No reactions.

- 1 mule, four times hyperimmunised with O, secondly tested with Tzaneen, thirdly tested with Bulawayo, and fourthly hyperimmunised with OTBLPW : No reaction.
- 3 mules, first hyperimmunised with O, then hyperimmunised with $\left. \begin{array}{l} \text{Ord.} \\ \text{Spont.} \end{array} \right\}$ and thirdly tested with Tzaneen : No reaction.
- 12 mules, first hyperimmunised with O, then hyperimmunised with Spont. C., and thirdly tested with Tzaneen : No reactions.
- 1 mule, first hyperimmunised with O, then hyperimmunised with Spont. C., and thirdly tested with $\left\{ \begin{array}{l} \text{Tz.} \\ \text{Bul.} \end{array} \right\}$: No reaction.
- 1 mule, hyperimmunised with O, secondly hyperimmunised with Spont. C., thirdly tested with Tzaneen, and fourthly hyperimmunised with Tzaneen : No reactions.
- 1 mule, hyperimmunised with O, secondly hyperimmunised with Spont. C., thirdly tested with Tzaneen, fourthly tested with Bulawayo, and fifthly hyperimmunised with Bulawayo, had a reaction with the fourth test.
- 36 mules were only tested with O and gave no reactions.
- 1 mule, first tested with O and secondly tested with Tzaneen
No reaction.
- 1 mule, first tested with O and secondly tested with Spont. C. :
No reaction.
- 1 mule, first tested with O secondly tested with Tzaneen, and thirdly with OTBLPW : No reaction.
- 7 mules were only tested with Tzaneen : 1 reaction.
- 1 mule, first test with Tzaneen and secondly hyperimmunised with Tzaneen : Reaction with the first test.
- 3 mules, first test Tzaneen, and second test Bulawayo : 1 mule had a reaction with the first test ; 1 mule had a reaction with the second test ; 1 mule had reactions with both tests.
- 1 mule, first tested with Tzaneen, secondly with Bulawayo, and thirdly hyperimmunised with Bulawayo, had reactions with the first and second tests.

2 mules were hyperimmunised with Bulawayo and had reactions, dikkop, and died.

1 mule tested with Bulawayo had reaction, dikkop, and died.

1 mule, first test with Bulawayo and secondly with Tzaneen :
Reaction and dikkop with the first test.

5 mules were tested with Spontaneous case : No reactions.

1 mule, first test with Spontaneous case and secondly with Tzaneen :
No reaction.

7 mules immunised with virus donkey 1427 and tested with O : No reactions.

2 mules, immunised with mule virus 1487 and tested with O : No reactions.

1 mule, immunised with virus X and tested with O : No reaction.

SUMMARY OF RESULTS OF TESTS ON MULES PREVIOUSLY IMMUNISED
WITH ORDINARY VIRUS.

No. of Mules.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
273	Ordinary Virus	—	—	—	—
139	Tzaneen	12	4	—	1
36	Bulawayo	7	6	1	6
6	Tzaneen and Bulawayo ..	2	—	—	—
1	OTB	—	—	—	—
4	OTBLPW	—	—	—	—
22	Spontaneous Cases	—	—	—	—
3	Ord.—Spontaneous Cases ..	—	—	—	—

IMMUNISATION OF MULES WITH VIRUS OF SPONTANEOUS AND RELAPSE CASES.

Mule No.	IMMUNISATION.				Result.	TEST.					Result.	
	Date of Injection.	Virus.				Date of Injection.	Virus.					
		No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.		
1805	1906. April 26	1785	Turn-bull	1	R	1906. May 12	1918	c.c. 10	Turn-bull	4	—	
1919	April 4	1785	"	1	R	April 26	1785	20	"	1	—	
1920	April 26	1785	"	1	R	May 12	1918	10	"	4	—	
1921	"	1785	"	1	R	"	1918	10	"	4	—	
1922	"	1785	"	1	R	"	1918	10	"	4	—	
1923	April 4	1785	"	1	R	April 26	1785	20	"	1	—	
1924	April 26	1785	"	1	?	May 12	1918	10	"	4	—	
1925	April 4	1785	"	1	R	April 26	1785	20	"	1	—	
1927	"	1785	"	1	R	"	1785	20	"	1	—	
1929	"	1785	"	1	R	"	1785	20	"	1	—	
1931	"	1785	"	1	R	"	1785	20	"	1	—	
1978	May 16	1785	"	1	R	June 5	1785	10	"	1	—	
1979	"	1785	"	1	R	"	1785	10	"	1	—	
1980	"	1785	"	1	R	"	1785	10	"	1	—	
1982	"	1785	"	1	R	"	1785	10	"	1	—	
1983	"	1785	"	1	?	"	1785	10	"	1	—	
1984	"	1785	"	1	R	"	1785	10	"	1	—	
1985	"	1785	"	1	R	"	1785	10	"	1	—	
1788	Feb. 25	Dale	Potche	fstr'm	R	Oct. 15	2199	5	Tzn.	12	—	
1926	April 18	1788	Dale	1	R	April 26	1785	20	Turn-bull	1	—	
1932	June 2	Edgar	Pieters	burg	R	Dec. 29	2476	9000	OTB	1	R	
1894	May 14	1957	Warm	baths	1	R	June 2	P.W.D	5	—	R	
2284	Oct. 19	1418	Cape	Colony	1	R	Nov. 27	1938	10	Ord.	62	—
								2199	10	Tzn.	12	—
								1964	10	Bul.	2	—
2455	Dec. 5	1418	"	1	R	1907. Jan. 8	2298	2	"	11	R†	
2456	"	2284	"	1	R	"	2199	2	Tzn.	12	R†	
2463	Dec. 19	1418	"	1	?	"	1938	2	Ord.	62	R†	

R—Reaction. ?—Doubtful. R†—Reaction and died.

ANALYSIS FROM PRECEDING TABLE.

25 mules immunised with virus Spontaneous cases were tested as follows:—

17 mules were tested with virus of Spontaneous case: No reactions.

2 mules, tested first with Spont. and secondly with Tzaneen: No reactions.

1 mule was tested with OTB and had a reaction.

1 mule, first test with Tzaneen and second test with OTB: No reaction.

1 mule tested with Ordinary had reaction, dikkop, and died.

1 " " Tzaneen " " "

1 " " Bulawayo " " "

1 mule, first test $\left\{ \begin{matrix} O \\ T \\ B \end{matrix} \right\}$, second test $\left\{ \begin{matrix} O \\ T \\ B \end{matrix} \right\}$, and third test Ord.: No reaction.

1 mule immunised with virus Warmbaths was tested with virus of a Public Works Department mule and showed a distinct reaction. A subsequent test with Tzaneen gave no reaction.

IMMUNISATION OF MULES WITH VIRUS OF SPONTANEOUS AND RELAPSE CASES

TEST.					Result.	TEST.					
Date of Injection.	Virus.					Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906.		c.c.					c.c.				
Oct. 15	2199	5	Tzn.	12	—						
Oct. 15	2199	5	Tzn.	12	—						
Dec. 29	2476	9000	OTB	1	—						
Oct. 15	2199	5	Tzn.	12	—						
Dec. 7	1938	7	Ord.	62	—	1907. Jan. 1	2287	2	Ord.	38	—
	2199	7	Tzn.	12	—						
	2298	6	Bul.	11	—						

SUMMARY OF RESULTS OF TESTS ON MULES PREVIOUSLY IMMUNISED WITH VIRUS OBTAINED FROM SPONTANEOUS AND RELAPSE CASES.

No. of Mules.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
2	Ordinary Virus	—	—	—	1
4	Tzaneen	—	—	—	1
1	Bulawayo	—	—	—	1
1	O-T-B-	—	—	—	—
2	OTB	1	—	—	—
19	Spontaneous Cases	—	—	—	—

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.

Horse No.	IMMUNISATION.					Result.	TEST.					Result.	
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.					
			No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.		
160	1902. Sept. 9	Ord.	138	Ord.	5	—	1902. Oct. 10	138	c.c. 10	Ord.	5	—	
	Oct. 31	"	102	"	4		1903. Feb. 9 Feb. 20 Mar. 5 April 8	262 265 278 295	100 200 500 1000	" " " "	5 6 7 9		
	Nov. 20	"	166	"	5			1902. Dec. 1	174	200	"		5
	Dec. 5	"	216	"	6								
172	Oct. 10	"	153	"	5	—						—	
	Oct. 24	"	102	"	4								
	Nov. 13	"	166	"	5								
290	1905. Mar. 13	"	726	"	37	RD	1905. April 10	697	8250	"	42	—	
							April 25 1906. Jan. 21 1903. Aug. 17 Sept. 14 1906.	1053 1646 354 370	1500 9000 500 1000	" " " "	44 61 12 14		
301	1903. May 1	"	295	"	9	R	June 15 1906.	2038	9000	"	4	—	
358	1906. April 25	"	1863	"	61	RD	July 19 1904.	2060	20	Bul.	2	R†	
384	1906. June 30	"	1863	"	61	R	Dec. 11 1904.	668	2750	Ord.	35	—	
398	1904. Nov. 4	"	547	"	32	RD	Dec. 30 1904.	666	4000	"	36	—	
407	"	"	547	"	32	R	Dec. 9 1904.	668	1500	"	35	—	
473	"	"	547	"	32	R	Dec. 29 1904.	671	950	"	37	—	
545	1904. Dec. 18	"	658	"	35	R	Dec. 13 1904.	658	6000	"	35	—	
							1905. Feb. 6	712	7000	"	39	—	
							Feb. 9 1906.	747	1500	"	39	—	
							July 21 1906. Sept. 1	2058 1964	10 5	Tzn. Bul.	6 2	— —	
602	1904. Dec. 2	"	659	"	35	RD	1905. May 10	1053	6500	Ord.	44	—	
							" 1906. Jan. 11 Jan. 20	1099 1632 1646	3000 3000 6000	" " "	46 61 61	— — —	

R—Reaction.

RD—Reaction with Dikkop.

R†—Reaction and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1903.		c.c.				1904.		c.c.			
May 5	300	1500	Ord.	10	—	Jan. 12	411	2000	Ord.	18	—
June 3	316	2500	"	11	—						
July 21	335	1700	"	11	—	Mar. 30	487	500	"	23	—
Aug. 11	338	2000	"	12	—						
Feb. 9	262	400	"	5	—	1903.					
Feb. 20	265	1000	"	6	—	Sept. 12	352	2000	"	14	—
Mar. 4	279	2000	"	7	—						
May 3	300	500	"	10	—	1904.					
May 21	292	1000	"	11	—	Jan. 12	411	2000	"	18	—
1905.						Mar. 29	487	1500	"	23	—
July 25	1246	9000	"	43	—	1905.					
						Dec. 20	1540	9000	"	60	—
1903.						1907.					
June 22	2032	9000	Tzn.	3	RD	Feb. 6	2624	6000	"	66	—
1903.						1904.					
Dec. 30	410	1500	Ord.	17	—	Feb. 2	425	2000	"	20	—
						Nov. 21	640	5	"	33	—
1905.						1906.					
July 28	1249	6000	"	42	—	Jan. 10	1632	6000	"	61	—
						Jan. 11	1589	2500	"	61	—
July 31	1248	3000	"	43	—						
						Mar. 20	1890	9000	Turn- bull	2	—
1906.						Mar. 29	1856	6000	"	3	—
Aug. 2	1869	20	Tzn.	1	—	Mar. 31	1876	3000	Elder	1	—
Nov. 14	2401	9000	OTB	3	—						
						Aug. 17	1964	1	Bul.	2	—
1905.						1905.					
Aug. 1	1248	9000	Ord.	43	—	Dec. 6	1493	9000	Ord.	58	—
1906.						1907.					
July 4	2033	9000	Tzn.	5	RD	Feb. 13	2634	6000	"	67	—

RD—Reaction with Dikkop.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se-rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
611	1904. Oct. 11	Ord.	623	Ord.	31	R	1904. Nov. 17	640	c.c. 4500	Ord.	33	—
612	Oct. 1	"	561	"	30	RD	"	640	4500	"	33	—
615	Oct. 20	"	547	"	32	R	Dec. 13 1905. Feb. 7	658 753	5000 3000	"	35 39	—
							1906. Jan. 12	1589	2000	"	61	—
							"	1538	6000	"	40	—
624	Dec. 30	"	694	"	36	RD	1905. Feb. 6 Feb. 8	753 747	4500 3500	"	39 39	—
714	1905. Mar. 13	"	726	"	37	R	April 11	808	9000	"	42	—
719	June 10	"	726	"	37	R	July 9 July 24 1906. May 18	1210 1246 1961	6000 3000 6000	"	40 43 6	—
							May 19 1905.	1962	3000	Turn- bull	6	—
720	April 17	"	726	"	37	R	1905. Oct. 18	1358	9000	Ord.	51	—
731	Mar. 13	"	726	"	37	RD	April 11 " 1906. Jan. 11 Aug. 29	808 865 1589 2111	6000 1500 9000 9000	"	42 42 61 7	—
811	Mar. 13	"	726	"	37	RD	1905. April 10 April 11 1906. Jan. 10 Jan. 12	808 866 1632 1538	4000 3000 6000 3000	Ord.	42 42 61 40	—
812	"	"	726	"	37	R	1905. April 11 1906. Jan. 11	865 1632	9000 9000	"	42 61	—
							Aug. 17 Dec. 16	1964 2416	1 9000	Bul. OTB LPW	2 2	—
868	Feb. 28	"	726	"	37	RD	1905. April 11	866	8000	Ord.	42	—
869	April 17	"	726	"	37	RD	May 16 1906. Jan. 12	1099 1538	9000 9000	"	46 40	—

R—Reaction.

RD—Reaction with Dikkop.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
875	1905. Mar. 13	Ord.	726	Ord.	37	RD	1905. April 11	866	c.c. 9000	Ord.	42	—
							1906. Feb. 24	1854	3000	„	64	—
							1906. Feb. 26	1853	6000	„	64	—
877	„	„	726	„	37	RD	1905. Sept. 6	2151	8500	Tzn.	10	—
							1905. May 29	1090	7500	Ord.	47	—
							1906. June 5	733	2000	„	48	—
881	„	„	726	„	37	RD	1906. April 6	1880	6000	Turn- bull	3	—
							1905. April 8	1891	3000	Elder	2	—
							1905. April 10	697	1750	Ord.	42	—
							1905. May 29	1090	2250	„	47	—
							1906. June 5	733	5500	„	47	—
							1906. Mar. 21	1889	6000	Turn- bull	2	—
882	„	„	726	„	37	RD	1905. April 10	697	9000	Ord.	42	—
							1906. Jan. 11	1589	8500	„	61	—
							1905. May 16	1095	9000	„	46	—
1055	April 17	„	726	„	37	R	„	1095	9000	„	46	—
1056	„	„	726	„	37	R	„	1095	9000	„	46	—
							1906. Feb. 27	1854	6000	„	64	—
							1905. Mar. 6	1862	3000	„	60	—
1075	May 15	„	726	„	37	RD	1905. June 14	944	9000	„	49	—
1076	„	„	726	„	37	RD	„	809	9000	„	49	—
1077	„	„	726	„	37	RD	1906. April 7	1891	9000	Elder	2	—
							1905. June 14	716	9000	Ord.	49	—
1078	„	„	726	„	37	RD	„	809	9000	„	49	—
							1906. April 8	1891	9000	Elder	2	—

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. July 18	1209	c.c. 3000	Ord.	42	—	1905. Nov. 23	1494	c.c. 9600	Ord.	57	—
July 24	1246	6000	..	43	—						
1906. June 15	2038	9000	..	4	—	1906. July 21	2058	10	Tzn.	6	—
1907. Feb. 12	2632	3000	..	67	—						
1905. Sept. 5	1301	6000	..	46	—	Jan. 11	1643	3000	Ord.	61	—
Sept. 6	1302	3000	..	46	—	Jan. 17	1542	6000	..	61	—
1906. July 4	2056	9500	Tzn.	5	—	1907. Feb. 14	2635	2500	..	68	—
1905. Sept. 6	1301	6000	Ord.	46	—	1906. Jan. 11	1643	9000	..	61	—
"	1302	3000	..	46	—						
1906. June 15	1916	9600	..	45	—	Aug. 3	1964	1	Bul.	2	—
Aug. 29	2111	9000	Bul.	7	—	Dec. 12	2416	9000	OTB LPW	2	—
1905. July 24	1247	3000	Ord.	43	—	1905. Nov. 30	1471	9000	Ord.	57	—
July 25	1246	6000	..	43	—						
1906. April 1	1376	6000	Elder	1	—	1907. Feb. 15	2635	2000	..	68	RD
April 6	1891	3000	..	2	—	Feb. 19	2637	1000	..	69	RD
1905. Aug. 22	1255	9000	Ord.	45	—	1905. Dec. 12	1528	9000	..	59	—
Aug. 23	1255	9000	..	45	—	..	1528	9000	..	59	—
1906. July 12	2058	8500	Tzn.	6	—	1907. Feb. 11	2630	3000	..	67	—
1905. Sept. 5	1302	3000	Ord.	46	—	1906. Jan. 11	1643	9000	..	61	—
Sept. 6	1301	6000	..	46	—						
1906. July 12	2059	9000	Tzn.	6	RD	1907. Feb. 12	2632	6000	..	67	—
1905. Sept. 6	1302	9000	Ord.	46	—						
"	1302	3000	..	46	—	1906. Jan. 17	1542	9000	..	61	—
Sept. 3	1310	6000	..	47	—						
1906. July 12	2059	9000	Tzn.	6	—	1907. Feb. 12	2632	6000	..	67	—

RD—Reaction with Dikkop.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.	
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.					
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1081	1905. May 15	Ord.	726	Ord.	37	R	1905.						
							June 13	716	e.c.	Ord.	49	—	
							June 23	943	2500 6500	„	50	—	
1082	„	„	726	„	37	R	1906.						
							May 9	1937	6000	Turn- bull	6	—	
							May 17	1961	3000	„	7	—	
1084	„	„	726	„	37	RD	1905.						
							June 14	1063	9000	Ord.	49	—	
							1906.						
1085	„	„	726	„	37	R	May 10	1918	9000	Turn- bull	6	—	
							June 15	1063	3000	„	49	—	
							June 22	943	6000	„	50	—	
1086	„	„	726	„	37	RD	1906.						
							Aug. 17	1964	1	Bul.	2	—	
							Nov. 20	2402	9000	OTB	4	—	
1087	„	„	726	„	37	RD	1905.						
							June 14	944	9000	Ord.	49	—	
							1906.						
1088	„	„	726	„	37	RD	May 10	1938	9000	„	62	—	
							June 15	1063	3000	„	49	—	
							June 22	943	5500	„	50	—	
1089	„	„	726	„	37	RD	1906.						
							May 10	1918	6000	Turn- bull	6	—	
							May 17	1961	3000	„	7	—	
1092	„	„	726	„	37	RD	1905.						
							June 13	944	2000	Ord.	49	—	
							June 14	1063	6500	„	49	—	
	„	„	726	„	37	RD	June 16	716	2500	„	49	—	
							June 23	943	6000	„	50	—	
							1906.						
							May 11	1937	9000	Turn- bull	4	—	
							Aug. 16	2086	8000	Bul.	5	—	

R—Reaction. RD—Reaction with Dikkop.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

TEST.						TEST.					
Date of Injection.	Virus.				Result.	Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. Sept. 23	1355	c.c. 3000	Ord.	48	—	1906. Jan. 28	1526	c.c. 9000	Ord.	62	—
1906. Sept. 26	1349	6000	„	49	—						
1906. July 12	2058	8500	Tzn.	6	RD†						
1905. Sept. 6	1302	3000	Ord.	46	—	Jan. 11	1643	9000	„	61	—
1905. Sept. 8	1310	6000	„	47	—						
1906. July 20	1959	9000	Bul.	3	—	Nov. 22	2403	6000	OTB	4	—
						Dec. 5	2418	3000	„	5	—
July 21	2058	10	Tzn.	6	—	Aug. 2	1869	20	Tzn.	1	—
1906. Sept. 1	1964	5	Bul.	2	—	Oct. 2	2298	9000	Bul.	11	?
1905. Sept. 9	1310	9000	Ord.	47	—	Jan. 17	1542	6000	Ord.	61	—
1906. July 20	1959	8500	Bul.	3	RD	Jan. 19	1588	3000	„	61	—
						Dec. 20	2480	9000	OTB LPW	3	—
1905. Sept. 27	1349	9000	Ord.	49	—	Jan. 29	1527	3000	Ord.	40	—
1906. July 21	2058	10	Tzn.	6	R†	Jan. 31	1644	6000	„	40	—
1905. Sept. 9	1310	9000	Ord.	47	—						
Sept. 27	1356	9000	„	49	—	Jan. 10	1538	6000	„	40	—
1906. July 21	2060	10	Bul.	2	—	Jan. 19	1588	3000	„	61	—
Dec. 5	2418	9000	OTB	5	—	Aug. 2	1964	20	Bul.	2	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.
RD†—Reaction with Dikkop and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se-rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1094	1905. May 15	Ord.	726	Ord.	37	RD	1905. June 14	1063	c.c. 9000	Ord.	49	—
							1906. May 18	1961	9000	Turn- bull	6	—
1098	"	"	726	"	37	R	1905. June 19	1100	3750	Ord.	50	—
							June 22	943	5000	"	50	—
1162	June 10	"	726	"	37	RD	July 3	1159	6000	"	39	—
							July 9	1210	3000	"	40	—
							1906. May 18	1962	9000	Turn- bull	6	—
1163	"	"	726	"	37	RD	1905. July 9	1210	4500	Ord.	40	?
							July 13	1218	3000	"	41	?
							July 17	1209	1500	"	42	?
							1906. May 18	1962	9000	Turn- bull	6	—
1170	"	"	726	"	37	RD	1905. July 13	1218	3000	Ord.	41	—
							July 18	1219	5500	"	42	—
							1906. May 19	1962	6500	Turn- bull	7	?
							May 23	1960	2500	"	8	?
1171	"	"	726	"	37	RD	1905. July 18	1209	8500	Ord.	42	—
							1906. May 19	1961	9000	Turn- bull	6	—
1172	"	"	726	"	37	RD	1905. July 18	1209	9000	Ord.	42	—
							1906. May 19	1962	4500	Turn- bull	7	—
							May 23	1974	4500	"	8	—
1173	"	"	726	"	37	RD	1905. July 18	1209	9000	Ord.	42	—
1174	"	"	726	"	37	RD	July 17	1217	1500	"	41	—
							July 17	1242	5500	"	41	—
							July 24	1246	1500	"	43	—

R—Reaction.

?—Doubtful.

RD—Reaction with Dikkop.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905.		c.c.				1906.		c.c.			
Sept. 19	1311	3000	Ord.	48	—	Jan. 10	1538	3000	Ord.	40	—
Sept. 23	1355	6000	„	48	—	Jan. 20	1588	6000	„	61	—
Oct. 27	1363	6000	„	53	—	Jan. 31	1644	3000	„	40	—
Oct. 31	1382	3000	„	54	—	Feb. 22	1851	6000	„	39	—
1906.						1907.					
July 19	2014	3000	Tzn.	7	—	Feb. 6	2624	6000	„	66	—
Aug. 24	2090	6000	„	9	—						
1905.						1906.					
Oct. 27	1363	6000	Ord.	53	—	Jan. 31	1644	3000	„	40	—
Oct. 31	1382	3000	„	54	—	Feb. 22	1852	6000	„	39	—
1906.						1907.					
July 19	2013	3000	Tzn.	7	R	Feb. 5	2624	6000	„	66	—
Aug. 24	2090	6000	„	9	R						
1905.						1906.					
Oct. 31	1382	6000	Ord.	54	—	Feb. 1	1644	9000	„	40	—
Nov. 8	1445	3000	„	55	—						
1907.											
Jan. 29	2553	9000	„	65	—						
1905.											
Oct. 31	1382	6000	„	54	—	Jan. 28	1584	3000	„	62	—
Nov. 8	1445	3000	„	55	—	Jan. 29	1527	6000	„	62	—
Nov. 9	1445	6000	„	55	—	Feb. 22	1852	3000	„	39	—
Nov. 21	1494	3000	„	57	—	Feb. 23	1855	6000	„	40	—
1907.											
Feb. 7	2625	3000	„	66	—						
1905.											
Nov. 9	1445	6000	„	55	—						
Nov. 21	1494	3000	„	57	—						

R—Reaction.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se-rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1175	1905. June 10	Ord.	726	Ord.	37	RD	1905. July 17	1217	c.c. 6000	Ord.	41	—
							July 21	1242	3000	"	41	—
							1906. May 23	1974	9000	Turn- bull	8	—
							Dec. 5	2418	9000	OTB	5	—
1216	July 14	"	726	"	37	RD	1905. Aug. 15	1259	9000	Ord.	44	—
							1906. June 7	2006	9000	Elder	3	—
1220	July 14	"	726	"	37	R	1905. Aug. 16	1259	9000	Ord.	44	—
1224	"	"	726	"	37	RD	"	1260	9000	"	44	—
1232	"	"	726	"	37	R	"	1260	9000	"	44	—
1236	Aug. 13	"	726	"	37	R	Sept. 23	1311	3000	"	48	—
							"	1355	6000	"	48	—
							1906. June 15	1916	8500	"	45	—
1238	Aug. 17	"	726	"	37	R	Sept. 3	1964	5	Bul.	2	—
							1905. Sept. 12	1284	9000	Ord.	47	—
							1906. June 22	2027	9000	Tzn.	3	RD†
							1905. Aug. 23	1255	1500	Ord.	45	—
1239	July 14	"	726	"	37	RD	Aug. 25	1264	7500	"	44	—
							1906. June 16	2028	3000	Tzn.	4	R
							June 22	2032	6000	"	3	R
1251	Aug. 3	"	726	"	37	R	1905. Aug. 27	1264	6000	Ord.	44	?
							Aug. 30	1299	3000	"	46	?
							1906. June 22	2032	3000	Tzn.	3	RD
							June 23	2029	6000	Elder	4	RD
1253	"	"	726	"	37	RD	1905. Aug. 26	1264	6000	Ord.	44	—
							Aug. 30	1299	3000	"	46	—
							1906. June 23	2027	6000	Tzn.	3	RD
1258	"	"	726	"	37	R	June 28	2026	3000	Elder	5	RD
							1905. Aug. 30	1299	6000	Ord.	46	—
							Sept. 5	1301	3000	"	46	—
							1907. Feb. 20	2637	6000	"	69	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.
RD†—Reaction with Dikkop and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. Nov. 15	1446	c.c.	Ord.	56	—	1906. Feb. 27	1854	c.c.	Ord.	64	?
1906. Aug. 3	1964	1	Bul.	2	RD	Aug. 15	2086	6000	Bul.	5	—
						Aug. 23	2093	3000	..	6	—
1905. Dec. 12	1528	9000	Ord.	59	—	Mar. 19	1889	3000	Turn- bull	2	—
1906. July 21	2058	10	Tzn.	6	RD†	Mar. 20	1890	6000	..	2	—
1905. Dec. 6	1493	4500	Ord.	58	—						
Dec. 18	1540	3000	..	60	—						
Dec. 31	1504	9000	..	40	—	Mar. 21	1890	9000	..	2	—
1906. Aug. 3	1869	1	Tzn.	1	—	Aug. 17	1964	1	Bul.	2	—
Dec. 6	2406	9000	OTB LPW	1	R						
1905. Dec. 31	1631	9000	Ord.	40	—	Mar. 21	1889	9000	Turn- bull	2	—
Dec. 12	1529	9000	..	59	—	Mar. 20	1890	6000	Turn- bull	2	—
						Mar. 21	1889	3000	..	2	—
Dec. 12	1528	6000	..	59	—	Mar. 15	1863	9000	Ord.	61	—
Dec. 18	1540	3000	..	60	—						
1907. Feb. 6	2625	6000	..	66	—						
1905. Dec. 12	1529	6000	..	59	—	Mar. 21	1398	9000	Alten- roxel	1	R
Dec. 18	1543	3000	..	60	—						
1907. Mar. 5	Relapse of dikkop										
1905. Dec. 19	889	9000	Ord.	6	—	June 29	2026	9000	Elder	5	R

R—Reaction ?—Doubtful. RD—Reaction with Dikkop.
RD†—Reaction with Dikkop and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1261	1905. Aug. 3	Ord.	726	Ord.	37	R	1905. Aug. 30	1299	c.c. 6000	Ord.	46	—
							1905. Sept. 5	1301	3000	„	46	—
							1906. July 4	2056	9000	Tzn.	5	—
1263	Aug. 17	„	726	„	37	RD	1905. Sept. 12	1284	9000	Ord.	47	—
1265	„	„	726	„	37	RD	„	1308	9000	„	47	—
1283	„	„	726	„	37	RD	„	1308	8500	„	47	—
1285	„	„	726	„	37	RD	„	1284	6000	„	47	—
							1905. Sept. 17	1348	3000	„	48	—
							1906. July 5	2056	8000	Tzn.	5	—
1288	„	„	726	„	37	RD	1905. Sept. 12	1308	2500	Ord.	47	—
							1905. Sept. 18	1348	6500	„	48	—
							1905. Sept. 19	1311	1000	„	48	—
							1906. July 4	2033	9000	Tzn.	5	R
1290	Sept. 9	„	726	„	37	R	1905. Oct. 4	1357	6000	Ord.	50	—
							1905. Oct. 5	1359	3000	„	50	—
1293	Aug. 17	„	726	„	37	R	1905. Sept. 12	1284	3000	„	47	—
							1905. Sept. 18	1348	3000	„	48	—
							1905. Sept. 19	1311	3000	„	48	—
1321	Sept. 9	„	726	„	37	RD	1906. July 21	2060	10	Bul.	2	R
							1905. Oct. 6	1359	8000	Ord.	50	—
							1906. July 5	2033	9000	Tzn.	5	R†
1322	„	„	726	„	37	R	1905. Oct. 5	1359	6000	Ord.	50	—
							1905. Oct. 17	1358	3000	„	51	—
1350	„	„	726	„	37	RD	1905. Oct. 4	1357	3000	„	50	—
							1905. Oct. 5	1359	6000	„	50	—

R—Reaction. RD—Reaction with Dikkop. R†—Reaction and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1905. Dec. 31	1504	c.c. 9000	Ord.	40	—	1906. Mar. 15	1865	c.c. 3000	Dale	2	—
1907. Feb. 14	2636	3000	„	68	—	Mar. 20	1889	6000	Turn- bull	2	—
1905. Dec. 20	1540	9000	„	60	—	Mar. 15	1865	3000	Dale	2	—
Dec. 19	1543	3000	„	60	—	Mar. 20	1398	6000	Alten- roxel	1	—
Dec. 30	1631	6000	„	40	—	1907. Feb. 6	2625	6000	Ord.	66	—
Dec. 19	1540	6000	„	60	—	1906. Mar. 29	1645	6000	Turn- bull	3	—
Dec. 29	1631	3000	„	40	—	April 6	1891	3000	Elder	2	—
Dec. 19	1543	3000	„	60	—						
Dec. 30	1631	6000	„	40	—	Mar. 24	1892	6000	Turn- bull	2	—
Dec. 31	1504	9000	„	40	—	Mar. 28	1645	3000	„	3	—
Dec. 31	1631	3000	„	40	—	Mar. 29	1645	3000	„	3	—
1906. Jan. 18	1542	6000	„	61	—	April 7	1891	6000	Elder	2	—
Oct. 30	2357	7500	OTB	2	—						
Feb. 21	1851	9000	Ord.	39	—	May 23	1974	9000	Turn- bull	8	—
Feb. 22	1852	9000	„	39	—						
Feb. 22	1851	3000	„	39	—						
Feb. 23	1855	6000	„	40	—						

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Serum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1351	1905. Sept. 9	Ord.	726	Ord.	37	?	1905. Oct. 4	1357	c.c. 9000	Ord.	50	—
1352	"	"	726	"	37	RD	Oct. 6	1359	9000	"	50	—
1353	"	"	726	"	37	R	Sept. 27	1349	6000	"	49	—
							Oct. 3	1357	3000	"	50	—
							1906. July 21	2058	10	Tzn.	6	—
1380	Oct. 10	"	726	"	37	R	1905. Nov. 22	1494	5500	Ord.	57	—
							Nov. 28	1471	3000	"	57	—
1381	"	"	726	"	37	R	Nov. 29	1471	9000	"	57	—
							1907. Feb. 6	2626	6000	"	66	—
1397	1906. June 30	"	1863	"	61	R	1906. July 19	2058	20	Tzn.	6	R†
1403	July 12	"	1863	"	61	RD	Aug. 17	1964	1	Bul.	2	RD
1448	Jan. 6	"	726	"	37	R	Feb. 21	1852	9000	Ord.	39	—
							Aug. 10	2082	9000	Tzn.	8	R
1453	Jan. 31	"	726	"	37	R	Mar. 15	1863	9000	Ord.	61	—
1515	1905. Dec. 19	"	726	"	37	R	Jan. 21	1588	3000	"	61	—
							Jan. 27	1541	5500	"	62	—
1579	1906. Jan. 6	"	726	"	37		Feb. 21	1852	9000	"	39	—
							Nov. 20	2402	6000	OTB	4	—
							Nov. 21	2403	3000	"	4	—
1587	"	"	726	"	37	R	Feb. 22	1851	9000	Ord.	39	—
							1907. Feb. 6	2624	3000	"	66	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop. R†—Reaction and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Date of Injection.	TEST.				Result.	Date of Injection.	TEST.				Result.
	Virus.						Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906. Jan. 20	1588	c.c. 9000	Ord.	61	—	1906. April 13	1911	c.c. 5500	Elder	3	—
						April 30	1893	3500	Turn- bull	5	—
Mar. 7	1862	9000	„	60	—	June 22	2027	9000	Tzn.	3	RD†
1905. Dec. 31	1504	3000	„	40	—	April 26	1857	9000	Turn- bull	4	—
1906. Jan. 17	1542	5500	„	61	—						
1907. Feb. 12	2632	1000	„	67	—						
Feb. 14	2636	2000	„	68	—						
1906. Mar. 24	1892	6000	Turn- bull	2	—						
Mar. 28	1645	3000	„	3	—						
Mar. 20	1398	3000	Alten- roxel	1	?	June 22	2032	6000	Tzn.	3	RD
Mar. 24	1892	6000	Turn- bull	2	?	June 23	2027	3000	„	3	RD
May 23	1960	9000	„	8	?	July 18	2058	10	„	6	R
1907. Feb. 7	2625	6000	Ord.	66	—						
1906. June 3	2001	8500	Tzn.	2	R	1907. Feb. 15	2636	3000	Ord.	68	—
						Feb. 20	2637	3000	„	69	—
April 26	1857	9000	Turn- bull	4	—	1906. July 12	2060	6000	Bul.	2	—
						July 20	1959	1500	„	3	—
May 23	1960	9000	„	8	—	July 12	2059	6000	Tzn.	6	R
						Aug. 24	2090	3000	„	9	R

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.
RD†—Reaction with Dikkop and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.				
		Orig.	No.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1654	1906. Jan. 31	Ord.	726	Ord.	37	RD	1906. Mar. 8	1862	c.c. 8500	Ord.	60	—
							Aug. 24	2093	1500	Bul.	6	—
							Aug. 29	2106	7500	..	7	—
1775	..	..	726	..	37	R	Mar. 29	1645	9000	Turn- bull	3	—
1781	..	..	726	..	37	RD	Mar. 24	1892	3000	..	2	—
							Mar. 28	1645	6000	..	3	—
1830	May 11	..	1863	..	61	R	June 8	2006	3000	Elder	3	—
							June 14	2038	6000	..	4	—
1904	July 12	..	1863	..	61	RD	Aug. 2	1869	1	Tzn.	1	R
1943	Oct. 19	..	1938	..	62	?	Nov. 22	1869	2	..	1	—
1958	April 25	..	1863	..	61	R	June 29	2040	9000	..	4	RD
							Dec. 7	1954	2	Bul.	1	—
1972	June 18	..	1863	..	61	R	July 20	2014	9000	Tzn.	7	R
2003	June 1	..	1863	..	61	R	June 27	2028	9000	..	4	RD
							Dec. 6	2409	9000	OTB LPW	1	—
2004	June 2	..	1863	..	61	R	June 27	2028	9000	Tzn.	4	R
2011	May 29	..	1863	..	61	R	June 29	2040	9000	..	4	R
2016	June 30	..	1863	..	61	RD	July 19	2060	20	Bul.	2	RD†
2019	..	..	1863	..	61	R	..	2058	20	Tzn.	6	—
2021	July 12	..	1863	..	61	RD	Aug. 2	1964	1	Bul.	2	RD†
2022	..	..	1863	..	61	RD	..	1869	1	Tzn.	1	—
							Sept. 26	2225	9000	Bul.	3	RD†
2077	..	..	1863	..	61	RD	Aug. 2	1964	1	..	2	—
2307	Oct. 6	T-B	1938	..	62	R	Nov. 22	1959	2	..	3	—
							Dec. 7 1907.	2287	2	Ord.	38	—
2390	Nov. 7	O-T-B	1938	..	62	RD	Jan. 10	2199	10	Tzn.	12	R

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.
RD†—Reaction with Dikkop and died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.—(cont.)

TEST.					Result.	TEST.					Result.*
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906. June 2	1990	c.c. 9000	Elder	2	—	1906. July 21	2060	c.c. 10	Bul.	2	—
Nov. 20	2402	9000	OTB	4	—	1907. Jan. 25	2599	3000	Spont. C.	1	R†
June 22	2029	6000	Elder	4	R						
June 28	2028	3000	Tzn.	4	R						
June 22	2029	3000	Elder	4	R						
June 23	2027	3000	Tzn.	4	R						
1907. Feb. 12	2632	3000	Ord.	67	—						
1906. Dec. 6	2409	9000	OTB LPW	1	—						
Aug. 31	2090	5000	Tzn.	9	—	1906. Nov. 21	1938	2	Ord.	62	—
"	2152	3500	"	2	—						
1907. Feb. 14	2636	6000	Ord.	68	—						
1906. Nov. 21	1938	2	"	62	—	Dec. 7	1954	2	Bul.	1	—
Sept. 5	2151	9000	Tzn.	10	—	Nov. 21	1938	2	Ord.	62	—
Nov. 21	1938	2	Ord.	62	—	Dec. 7	1954	2	Bul.	1	R
Aug. 17	1964	1	Bul.	2	—	Aug. 29	2111	8500	"	7	—
Aug. 17	1964	1	"	2	—	Sept. 1	1964	5	"	2	—
"	1964	10	"	2	RD†						
Dec. 7	1954	2	"	1	—						
1907. Jan. 18	2552	9000	Ord.	64	—						

R—Reaction. R†—Reaction and died. RD†—Reaction with Dikkop and died.

ANALYSIS FROM PRECEDING TABLES.

104 horses, immunised with Ordinary virus were hyperimmunised and tested as follows :—

16 horses, once hyperimmunised with O : No reactions.

10 „ twice „ „

5 „ three times hyperimmunised with O : No reactions.

1 horse, 1st hyperimmunised with O, 2nd with hyperimmunised Tzaneen, and 3rd hyperimmunised with O : A reaction with 2nd test.

1 horse, twice hyperimmunised with O and then hyperimmunised with Tzaneen, had reaction, dikkop, and died.

3 horses, four times hyperimmunised with O, 5th hyperimmunised with Tzaneen, and 6th hyperimmunised with O : 2 had reaction and dikkop when hyperimmunised with Tzaneen.

1 horse, 1st hyperimmunised with O, 2nd and 3rd time tested with Tzaneen, 4th and 5th tested with Bulawayo, 6th hyperimmunised with Bulawayo, and 7th hyperimmunised with OTB, had a doubtful reaction with 6th test.

1 horse, five times hyperimmunised with O, 6th tested with Tzaneen, 7th hyperimmunised with Tzaneen, and 8th hyperimmunised with O : No reaction.

1 horse was twice tested with O and had no reaction.

1 horse, four times hyperimmunised with O, 5th hyperimmunised with Bulawayo, 6th hyperimmunised with OTBLPW, and 7th hyperimmunised with Spontaneous Case + OTBLPW : Reaction and dikkop with 5th test.

1 horse, four times hyperimmunised with O : No reaction. Tested with Bulawayo gave reaction and dikkop.

1 horse, five times hyperimmunised with O, 6th tested with Bulawayo, 7th hyperimmunised with Bulawayo, and 8th hyperimmunised with OTBLPW : No reaction.

2 horses, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd hyperimmunised with Tzaneen, 4th hyperimmunised with O : 1 had doubtful reaction with 2nd test and reaction and dikkop with 3rd test ; 1 a reaction with 3rd test.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd tested with Tzaneen, 4th hyperimmunised with Tzaneen, and 5th hyperimmunised with O : Had a doubtful reaction with 2nd test ; reaction with 3rd test and also with 4th test.

3 horses, twice hyperimmunised with O and then hyperimmunised with Spont. C. : No reactions.

1 horse, twice hyperimmunised with O 3rd, hyperimmunised with Spont C., and 4th hyperimmunised with O : Reaction when hyperimmunised with Spont. C. -

1 horse, twice hyperimmunised with O, 3rd hyperimmunised with Spont. C., 4th hyperimmunised with O, 5th and 6th tested with Bulawayo, and 7th hyperimmunised with OTBLPW : Reaction with last test.

- 5 horses, twice hyperimmunised with O, 3rd hyperimmunised with Spont. C., and 4th hyperimmunised with Tzaneen: 2 had reactions when hyperimmunised with Tzaneen, and 2 others had reactions, dikkop, and died.
- 2 horses, twice hyperimmunised with O, 3rd hyperimmunised with Spont. C., 4th hyperimmunised with Tzaneen, and 5th hyperimmunised with O: No reaction.
- 1 horse, twice hyperimmunised with O, 3rd and 4th hyperimmunised with Spont. C., and 5th tested with Tzaneen: Reaction, dikkop, and died on last test.
- 1 horse, twice hyperimmunised with O, 3rd hyperimmunised with Spont. C., and 4th $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$: Had a reaction with Spont. C. reaction and dikkop with hyperimmunised $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$ and later on a relapse of dikkop spontaneously contracted at Onderstepoort, Pretoria District.
- 2 horses, thrice hyperimmunised with O, and 4th hyperimmunised with Spont. C.: No reactions.
- 3 horses, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., and 5th hyperimmunised with O: 1 had a doubtful reaction when hyperimmunised with Spont. C.
- 1 horse, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., 5th hyperimmunised with O, 6th and 7th tested with Bulawayo, 8th hyperimmunised with Bulawayo, and 9th hyperimmunised with OTBLPW: No reaction.
- 1 horse, thrice hyperimmunised with O, 4th hyperimmunised with $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$ and 5th hyperimmunised with O: Had a doubtful reaction with 1st hyperimmunised O, and reaction and dikkop with hyperimmunised $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$
- 2 horses, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., and 5th hyperimmunised with Tzaneen: Reactions, dikkop, and died.
- 5 horses, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., 5th hyperimmunised with Tzaneen, and 6th hyperimmunised with O: 1 had a doubtful reaction with 1st test and a reaction when hyperimmunised with Tzaneen; 1 had reaction and dikkop when hyperimmunised with Tzaneen.
- 1 horse, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., 5th and 6th tested with Tzaneen, 7th and 8th tested with Bulawayo, and 9th hyperimmunised with OTB: No reaction.
- 2 horses, four times hyperimmunised with O, 5th hyperimmunised with $\left\{ \begin{array}{l} \text{Spont.} \\ \text{Tzn.} \end{array} \right\}$ and 6th hyperimmunised with O: 1 had a reaction and dikkop with the 6th test (O).

- 1 horse, four times hyperimmunised with O, 5th hyperimmunised with Spont. C., 6th tested with Tzaneen, 7th and 8th tested with Bulawayo, 9th hyperimmunised with Bulawayo, and 10th hyperimmunised with OTBLPW : No reaction.
- 1 horse, first hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd hyperimmunised with Bulawayo, and 4th hyperimmunised with OTB : No reaction.
- 1 horse, first hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd tested with Bulawayo, 4th hyperimmunised with Bulawayo, 5th hyperimmunised with OTB, and 6th hyperimmunised with Spont. C. Reaction and died.
- 1 horse, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., 5th hyperimmunised with Bulawayo, and 6th hyperimmunised with OTB : No reaction.
- 1 horse, twice hyperimmunised with O, 3rd test hyperimmunised with Spont., 4th test with Bulawayo, and 5th hyperimmunised with OTB : Reaction with 4th test.
- 1 horse, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., 5th and 6th tested with Bulawayo, 7th hyperimmunised with Bulawayo, and 8th hyperimmunised with OTB : No reaction.
- 1 horse, thrice hyperimmunised with O, 4th hyperimmunised with Spont. C., 5th tested with Bulawayo, 6th hyperimmunised with Bulawayo, and 7th hyperimmunised with OTB : Had a doubtful reaction with 3rd hyperimmunised O, and reaction and dikkop with the Bulawayo test.
- 1 horse, four times hyperimmunised with O, 5th hyperimmunised with Spont. C., and tested 6th with Bulawayo : Reaction with Bulawayo test.
- 1 horse was hyperimmunised with Tzaneen and had a reaction.
- 1 horse, 1st and 2nd hyperimmunised with Tzaneen, 3rd tested with O, and 4th hyperimmunised with OTBLPW had reaction and dikkop with 1st hyperimmunised Tzaneen.
- 1 horse, 1st and 2nd hyperimmunised with Tzaneen, 3rd tested with O, 4th tested with Bulawayo, and 5th hyperimmunised with O had reaction and dikkop with the 1st hyperimmunised Tzaneen.
- 2 horses, 1st hyperimmunised with Tzaneen, 2nd tested with O, and 3rd tested with Bulawayo : 1 had a reaction when hyperimmunised with Tzaneen ; 1 had reactions when hyperimmunised with Tzaneen and tested with Bulawayo.
- 3 horses were tested with Tzaneen : 2 had reactions and 1 had a reaction and died.
- 1 horse was 1st tested with Tzaneen and 2nd with OTBLPW : No reaction.
- 2 horses, first tested with Tzaneen, 2nd tested with Bulawayo, and 3rd hyperimmunised with Bulawayo : 1 had reaction, dikkop, and died ; 1 had no reaction.

4 horses were tested with Bulawayo : 1 had reaction and dikkop, and 3 had reactions, dikkop, and died.

2 horses were twice tested with Bulawayo : 1 had a reaction, dikkop, and died on 2nd test.

1 horse, 1st hyperimmunised with Spont. C., and 2nd hyperimmunised with O : No reaction.

2 horses, hyperimmunised with Spont. C., and 2nd hyperimmunised with $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$ both had reactions with 2nd hyperimmunisation.

2 horses, immunised with mule virus 1489, viz., Ordinary virus passed through donkey 1599 :—

1 horse was tested with Tzaneen : Reaction and died.

1 horse tested with Bulawayo : Reaction and died.

1 horse immunised with mule virus 1487, viz., Ordinary virus passed through goats 375, 378, and 381 was first hyperimmunised with O, 2nd hyperimmunised with Spont. C., and 3rd hyperimmunised with Tzaneen : Reaction and died.

4 horses immunised with virus X (mixture of blood from goats 375, 378, and 381, injected with Ordinary virus) :—

1 horse was hyperimmunised with O : No reaction.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C., and 3rd hyperimmunised with Tzaneen : Reaction and dikkop when hyperimmunised with Tzaneen.

1 horse, 1st hyperimmunised with O, and 2nd hyperimmunised with $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Ord.} \end{array} \right\}$: No reaction.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd tested with Tzaneen, 4th tested with Bulawayo, and 5th hyperimmunised with Bulawayo : A doubtful reaction with the 3rd test and a distinct reaction with the 4th test.

SUMMARY OF RESULTS OF TESTS ON HORSES PREVIOUSLY IMMUNISED WITH ORDINARY VIRUS.

No. of Horses.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
88	Ordinary Virus	—	1	3	—
40	Tzaneen	12	6	—	7
26	Bulawayo	3	4	1	5
10	OTB	—	—	—	—
5	OTBLPW	1	—	—	—
43	Spontaneous Case	2	—	3	1
5	Tzaneen and Spont. C. ..	2	2	—	—
1	Ord. and Spont. C. ..	—	—	—	—
1	OTBLPW and Spont. C. ..	—	—	—	—

IMMUNISATION OF HORSES WITH ORDINARY VIRUS (PASSED THROUGH DONKEYS).

Horse No.	IMMUNISATION.						TEST.					Result.
	Date of Injection.	Se-rum.	Virus.			Date of Injection.	Virus.					
			Orig.	No.	Orig.		Gen.	No.	Qu.	Orig.	Gen.	
1653	Jan. 26	Ord.	1506	Ord.	39	RD	1906. Feb. 24	1855	6000	Ord.	40	—
							Feb. 26	1854	3000	„	64	—
1669	„	„	1506	„	39	R	Feb. 22	1853	6000	„	64	—
							March 6	1862	3000	„	60	—
1674	„	„	1506	„	39	R	Aug. 15	2089	9000	„	63	—
1859	July 18	„	1506	„	39	R	„	2089	6000	„	63	—
1988	July 12	„	1506	„	39	RD	Aug. 17	1964	10	Bul.	2	—
2010	June 28	„	1506	„	39	R	July 19	2060	20	„	2	R†
2012	June 29	„	1506	„	39	R	July 20	2014	9000	Tzn.	7	RD†
2037	July 18	„	1506	„	39	R	Aug. 17	1964	1	Bul.	2	—
							Oct. 29	2357	5000	OTB	2	—
							Dec. 6	2418	3000	OTB	5	—
2041	July 12	„	1506	„	39	R	Aug. 2	1869	1	Tzn.	1	—
2043	July 18	„	1506	„	39	R	Aug. 17	1964	1	Bul.	2	—
1882	June 28	„	1489	„	61	RD	July 19	2058	20	Tzn.	6	R†
1971	„	„	1489	„	61	R	Aug. 17	1964	1	Bul.	2	R†
	1905.						1906.					
1507	Dec. 19	„	1487	„	1	R	Jan. 27	1584	6000	Ord.	62	—
							Jan. 29	1527	3000	„	40	—
1505	„	„	X	„	1	R	Jan. 27	1584	9000	„	62	—
1578	„	„	X	„	1	R	„	1584	9000	„	62	—
1580	„	„	X	„	1	RD	„	1541	5500	„	62	—
							Jan. 29	1527	3500	„	40	—
1582	„	„	X	„	1	R	Jan. 21	1588	3000	„	61	—
							Jan. 27	1541	6000	„	62	—
							Aug. 17	1964	1	Bul.	2	R

R—Reaction. RD—Reaction with Dikkop. R†—Reaction and Died.
RD†—Reaction with Dikkop and Died.

ANALYSIS FROM PRECEDING TABLE.

10 horses, immunised with horse virus 1506, viz., Ordinary virus passed through donkeys 1427, 1429, 1430, 1431:—

- 1 horse, hyperimmunised with Ordinary: No reaction.
- 1 horse, twice hyperimmunised with Ordinary: No reaction.
- 1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Tzaneen, and 3rd hyperimmunised with O: Reaction with Tzaneen.
- 1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C, and 3rd tested with Bulawayo: Reaction, dikkop, and died.
- 1 horse, hyperimmunised with Tzaneen: Reaction, dikkop, and died.
- 1 horse, 1st tested with Tzaneen, and 2nd test with Bulawayo. Reaction, dikkop, and died.
- 1 horse, tested with Bulawayo: Reaction and died.
- 1 horse, 1st test with Bulawayo, 2nd hyperimmunised with Bulawayo: No reaction.
- 1 horse, 1st and 2nd test with Bulawayo, and 3rd hyperimmunised with Bulawayo: Reaction and dikkop when hyperimmunised with Bulawayo.
- 1 horse, 1st and 2nd test with Bulawayo, 3rd hyperimmunised with Bulawayo, and 4th hyperimmunised with OTB: No reaction.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS (PASSED THROUGH DONKEYS)

TEST.						TEST.					
Date of Injection.	Virus.				Result.	Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906. May 23	1974	6000	Turn-bull	8	—	1906. Aug. 3	1964	1	Bul.	2	RD†
May 31	1990	3000	Elder	2	—						
June 2	2001	9000	Tzn.	2	R	1907. Feb. 6	2625 2626	3000 3000	Ord. "	66 66	— —
1907. Feb. 14	2636	3000	Ord.	68	—						
Feb. 19	2637	3000	"	69	—						
1906. Aug. 28	2109	9000	Bul.	7	—						
1906. Sept. 1	1964	5	Bul.	2	—	1906. Oct. 10	2150	8500	Bul.	12	—
Aug. 17	1964	1	"	2	RD†						
Sept. 1	1964	5	"	2	—	Sept. 26	2225	9000	Bul.	3	RD
April 26	1857	8000	Turn-bull	4	—	July 13	2059	9000	Tzn.	6	R†
May 1	1893	9000	Turn-bull	5	—	June 28	2028	9000	Tzn.	4	RD
June 2	2001	3000	Tzn.	2	—						
June 6	2006	6000	Ord.	3	—						
May 1	1893	9000	Turn-bull	5	—	Aug. 3	1869	1	"	1	?
Aug. 29	2109	9000	Bul.	7	—						

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.
RD†—Reaction with Dikkop and Died.

SUMMARY OF RESULTS OF TESTS ON HORSES PREVIOUSLY IMMUNISED WITH HORSE VIRUS 1506.

(Viz., Ordinary virus passed through Donkeys 1427, 1429, 1430, 1431.)

No. of Horses.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
4	Ordinary Virus	—	—	—	—
3	Tzaneen	1	—	—	1
6	Bulawayo	—	1	—	3
1	OTB	—	—	—	—
1	Spontaneous Case	—	—	—	—

IMMUNISATION OF HORSES WITH ORDINARY VIRUS.
PASSED THROUGH A DONKEY.

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1399	1905. Dec. 19	Ord.	1427	Ord.	38	R	1906. Jan. 26	1526	c.c. 9000	Ord.	62	R†
1406	1906. Jan. 31	„	1427	„	38	R	Mar. 15	1863	9000	„	61	R
1656	Jan. 26	„	1427	„	38	R	Mar. 8	1788	2	Dale	1	RD
1659	„	„	1427	„	38	RD	Feb. 28	1854	9000	Ord.	64	—
							Aug. 2	1964	20	Bul.	2	—
							Dec. 4	2418	3000	OTB	5	—
1660	„	„	1427	„	38	R	Feb. 24	1855	5500	Ord.	40	?
							Feb. 26	1853	3000	„	64	?
1661	„	„	1427	„	38	RD	Feb. 27	1853	6000	„	64	—
							Mar. 6	1862	3000	„	60	—
							Aug. 10	2082	9000	Tzn.	8	—
1665	Jan. 31	„	1427	„	38	R	Mar. 8	1862	9000	Ord.	60	—
							1907. Feb. 15	2636	3000	„	68	—
							Feb. 19	2637	3000	„	69	—
1672	Feb. 12	„	1427	„	38	RD	1906. April 6	1880	6000	Turn- bull	3	—
							April 8	1891	3000	Elder	2	—
1866	Mar. 24	„	1427	„	38	R	May 3	1893	9000	Turn- bull	5	R
1973	May 25	„	1427	„	38	RD	June 28	2026	9000	Ord.	5	R
							Oct. 5	2199	9000	Tzn.	12	—
2023	June 8	„	1427	„	38	R	July 19	2060	20	Bul.	2	R†

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop. R†—Reaction and Died.

IMMUNISATION OF HORSES WITH ORDINARY VIRUS,
PASSED THROUGH A DONKEY.

TEST.					Result.	TEST.					
Date of Injection.	Virus.					Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
		c.c.									
1906.						1907.		c.c.			
June 2	2001	9000	Tzn.	2	R	Feb. 14	2635	3000	Ord.	68	—
June 6	2006	9000	Ord.	3	—	1906.					
						Aug. 15	2089	5000	„	63	?
Mar. 23	1974	6000	Turn- bull	8	—	July 21	2060	10	Bul.	2	—
May 31	1990	3000	Elder	2	—						
Aug. 15	2086	2000	Bul.	5	—	Nov. 22	2403	9000	OTB	4	—
Aug. 24	2093	5000	„	6	—						
May 23	1960	6000	Turn- bull	8	?	1907.					
						Feb. 12	2630	3000	Ord.	67	—
May 31	1990	3000	Elder	2	?	Feb. 20	2637	3000	„	69	—
June 1	1960	2500	Turn- bull	8	—	1906.					
						July 21	2058	10	Tzn.	6	R
„	1990	6500	Elder	2	—						
1907.											
Feb. 12	2634	3000	Ord.	67	—						
Feb. 14	2635	3000	„	68	—						
1906.											
June 1	1990	6000	Elder	2	R	Sept. 6	2151	9000	Tzn.	10	—
„	2001	3000	Tzn.	2	R						
June 23	2027	8500	Tzn.	3	RD	1907.					
						Feb. 14	2635	6000	Ord.	68	—
July 12	2060	9000	Bul.	2	R†						
Aug. 3	1964	1	„	2	RD	1906.					
						Aug. 24	2093	3000	Bul.	6	—
						Aug. 28	2106	6000	„	7	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop. R†—Reaction and Died.

ANALYSIS FROM PRECEDING TABLE.

11 horses, immunised with donkey virus 1427 (donkey 1427 was injected with Ord. virus 726).

1 horse was hyperimmunised with O : Reaction and died.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Tzaneen, 3rd hyperimmunised with Ord. : Reaction with 1st hyperimmunisation O, and also reaction when hyperimmunised with Tzaneen.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C., and 3rd hyperimmunised with O : Doubtful reactions with the 1st and 2nd hyperimmunisations.

1 horse, hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd and 4th tested with Bulawayo, 5th hyperimmunised with Bulawayo, 6th and 7th hyperimmunised with OTB : No reaction.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Spont. C., 3rd tested with Tzaneen, 4th hyperimmunised with Tzaneen, and 5th hyperimmunised with O : Reaction with the 3rd test.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$, 3rd hyperimmunised with Tzaneen, and 4th hyperimmunised with O : Reaction when hyperimmunised with $\left\{ \begin{array}{l} \text{Tzn.} \\ \text{Spont.} \end{array} \right\}$.

1 horse, 1st hyperimmunised with O, 2nd tested with Bulawayo, 3rd hyperimmunised with Bulawayo, and 4th hyperimmunised with Tzaneen : Reaction when hyperimmunised with O and reaction and dikkop with the Bulawayo test.

1 horse was tested with Bulawayo : Reaction and died.

1 horse, 1st test with Spont. C., 2nd and 3rd hyperimmunised with O : Reaction and dikkop with test Spont. C., and a doubtful reaction with 3rd hyperimmunisation.

1 horse, 1st hyperimmunised with Spont. C., 2nd hyperimmunised with Tzaneen, and 3rd hyperimmunised with O : Reaction and dikkop when hyperimmunised with Tzaneen.

1 horse, 1st hyperimmunised with Spont. C., 2nd hyperimmunised with Bulawayo : Reaction with 1st hyperimmunisation, and reaction and died 2nd hyperimmunisation.

SUMMARY OF RESULTS OF TESTS ON HORSES PREVIOUSLY IMMUNISED WITH DONKEY VIRUS 1427 (ORD. VIRUS).

No. of Horses.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
11	Ordinary Virus	2	—	2	1
5	Tzaneen	2	1	—	—
5	Bulawayo	—	1	—	2
1	OTB	—	—	—	—
6	Spontaneous Case	1	1	1	—
1	Tzaneen and Spont. C. ..	1	—	—	—

IMMUNISATION OF HORSES WITH TZANEEN VIRUS.

Horse No.	IMMUNISATION.						Result.	TEST.						Result.
	Date of Injection.	Serum.	Virus.			Date of Injection.		Virus.				Result.		
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.	
1909	1906. July 12	Ord.	1869	Tzn.	1	RD	1906. Aug. 2	1863	c.c. 10	Ord.	61	—		
1915	Aug. 2	Tzn.	1869	"	1	RD	Oct. 9	2148	8500	Tzn.	13	R†		
1944	June 14	Ord.	1869	"	1	R	July 19	2060	20	Bul.	2	—		
							Nov. 21	1938	2	Ord.	62	—		
1989	June 26	"	1869	"	1	R	July 19	2060	20	Bul.	2	R		
2008	July 12	"	1869	"	1	RD	Aug. 2	1863	10	Ord.	61	—		
2079	July 12	"	1869	"	1	RD	"	1964	10	Bul.	2	R		
2081	"	"	1869	"	1	R	"	1964	10	"	2	RD		
							Dec. 6-11	2406 2409 2416	9000	OTB LPW	1 1 2	—		
2110	Sept. 27	Bul.	1869	"	1	R								
	Nov. 8	"	2199	"	12	RD	Dec. 7	2267	2	Tzn.	3	—		
2128	Aug. 2	Tzn.	1869	"	1	R								
	Oct. 19	Bul.	2199	"	12	R	Nov. 22	726	2	Ord.	37	?		
2135	Aug. 2	Tzn.	1869	"	1	RD	Sept. 21	2171	9000	Tzn.	11	R		
2140	Nov. 8	OB* (H&D)	2199	"	12	R	Dec. 7	2267	2	"	3	R		
2278	Oct. 19	Bul.	2199	"	12	RD	Nov. 22	1938	2	Ord.	62	R		
2310	Oct. 6	"	1869	"	1	RD	"	1938	2	"	62	R		
2098	Oct. 11	Bul.	2169	"	3	R	1907. Feb. 8	2407	2	Ord.	38	—		
2198	Sept. 27	"	2169	"	3	R	1906. Oct. 24	2153	3000	OTB	1	R†		
2238	Oct. 12	"	2169	"	3	R	Nov. 5	2208	5	Bul.	2	—		
2244	Oct. 11	"	2169	"	3	RD	1907. Feb. 8	2407	2	Ord.	38	R†		
2205	Sept. 27	Bul.	2267	"	3	R	1906. Oct. 24	2153	6000	OTB	1	R†		
2349	Oct. 22	Ord.	2267	"	3	R	Nov. 22	2199	2	Tzn.	12	—		
2350	"	Bul.	2267	"	3	R	"	2199	2	"	12	—		
2351	"	"	2267	"	3	R	"	2199	2	"	12	R†		
2353	"	"	2267	"	3	?	"	2199	2	"	12	RD†		
2354	"	"	2267	"	3	R	"	2199	2	"	12	R		
2355	"	"	2267	"	3	?	"	2199	2	"	12	RD†		

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop.

R†—Reaction and died. RD†—Reaction with Dikkop and died.

*NOTE.—Mixture of Ordinary and Bulawayo Serum of Horses and Donkeys.

IMMUNISATION OF HORSES WITH TZANEEN VIRUS.

TEST.						TEST.					
Date of Injection.	Virus.				Result.	Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1906. Aug. 17	1964	c.c. 1	Bul.	2	RD	1906.		c.c.			
Aug. 11	2083	9000	Bul.	4	—	Oct. 9	2148	8000	Tzn.	13	R
Dec. 6	2406	9000	OTB LPW Bul.	1	—						
Aug. 10	2083	9000	Bul.	4	—	Aug. 28	2109	2000	Bul.	7	—
Aug. 17	1964	1	„	2	R	„	2111	3000	„	7	—
Aug. 24	2093	9000	„	6	—	Sept. 3	2149	3000	„	8	—
Aug. 19	2093	9000	„	6	—	Nov. 21	1938	2	Ord.	62	R
1907. Jan. 10	2496	10	Ord.	63	—	1907. Feb. 23	2640	9000	OTB LPW	2	R
1906. Dec. 7	1954	2	Bul.	1	—	1907. Jan. 19	2552	8500	Ord.	64	R†
Nov. 21	1938	2	Ord.	62	R†						
1907. Feb. 8	2407	2	„	38	R	1907. Jan. 10	2496	6000	Ord.	63	—
Dec. 13	1954	2	Bul.	1	—	Jan. 28	2553	3000	„	65	—
„	1954	2	„	1	—	Jan. 10	2496	6000	„	63	—
						Jan. 28	2553	3000	„	65	—
1907. Feb. 8	2407	2	Ord.	38	R†						
1906. Dec. 13	{ 1938 2199 2298	2	{ O T B	{ 62 12 11	—						
„	{ 1938 2199 2298	2	{ O T B	{ 62 12 11	—						
Dec. 13	{ 1938 2199 2298	2	{ O T B	{ 62 12 11	R†						

R—Reaction. RD—Reaction with Dikkop. R†—Reaction and died.

ANALYSIS FROM PRECEDING TABLE.

13 horses, immunised with Tzaneen virus.

1 horse, 1st test with O, and 2nd test with Bulawayo : Reaction and dikkop with the 2nd test.

1 horse, 1st test with O, 2nd tested with Bulawayo, and 3rd hyperimmunised with Bulawayo : Reaction with the 2nd test.

3 horses, 1st tested with O, 2nd tested with Bulawayo, and 3rd hyperimmunised with O : 2 had reactions with the 1st test: 1 a doubtful reaction with the 1st test, and reaction and died when hyperimmunised with O.

1 horse was hyperimmunised with Tzaneen : Reaction and died.

1 horse, hyperimmunised with Tzaneen and 2nd tested with O : Reaction when hyperimmunised with Tzaneen, and reaction and died with the 2nd test.

1 horse, 1st tested with Tzaneen and 2nd tested with O. : Reaction with both tests.

1 horse, 1st test with Tzaneen, 2nd tested with O, and 3rd hyperimmunised with OTBLPW : Reaction when hyperimmunised with OTBLPW.

2 horses, 1st tested with Bulawayo, 2nd hyperimmunised with Bulawayo : Both had reactions with the 1st test.

1 horse, 1st tested with Bulawayo, 2nd hyperimmunised with Bulawayo, 3rd tested with O, and 4th hyperimmunised with OTBLPW : Reaction and dikkop with the 1st test, and a reaction with the 3rd test.

1 horse, 1st tested with Bulawayo, 2nd hyperimmunised with Bulawayo, 3rd hyperimmunised with Tzaneen, 4th tested with O, and 5th hyperimmunised with OTBLPW : Reaction with 3rd test.

4 horses, immunised with horse virus 2169, viz., Tzaneen virus passed through donkey 1773.

2 horses were tested with O : 1 had a reaction and died.

1 horse, 1st tested with Bulawayo, and 2nd tested with O : Reaction and died with the 2nd test.

1 horse was hyperimmunised with OTB : Reaction and died.

7 horses, immunised with mule virus 2267 (viz., Tzaneen virus passed through donkey 1773).

3 horses were tested with Tzaneen: 1 had a reaction and died ; 2 had reactions, dikkop, and died.

3 horses, 1st tested with Tzaneen, and 2nd tested with $\begin{Bmatrix} O \\ T \\ B \end{Bmatrix}$: 1 had a reaction with the 1st test and reaction and died with the 2nd test.

1 horse was hyperimmunised with OTB : Reaction and died.

SUMMARY OF RESULTS OF TESTS ON HORSES PREVIOUSLY IMMUNISED WITH TZANEEN VIRUS.

No. of Horses.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
10	Ordinary Virus	4	—	1	2
5	Tzaneen	3	—	—	1
9	Bulawayo	3	2	—	—
3	OTBLPW	1	—	—	—

IMMUNISATION OF HORSES WITH BULAWAYO VIRUS.

Horse No.	IMMUNISATION.					Result.	TEST.					Result.
	Date of Injection.	Se- rum.	Virus.				Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1946	1906. Aug. 16	Bul.	1964	Bul.	2	R	1906. Sept. 4	2149	6000	Bul.	8	—
1953	„	B-T*	1964	„	2	R	Sept. 12	2172	3000	„	9	—
1977	„	Bul.	1964	„	2	R	„	2172	9000	„	9	R
							Sept. 18	2172	3000	„	9	—
								2168	6000	„	10	—
2124	Sept. 20	„	1964	„	2	RD	Oct. 21	2167	9000	Tzn.	5	—
2125	Sept. 28	„	1964	„	2	RD	Oct. 17	1938	10	Ord.	62	R
2132	Sept. 20	Tzn.	1964	„	2	RD	Oct. 21	2167	9000	Tzn.	5	R†
2176	Aug. 16	B-T*	1964	„	2	R	Sept. 17	2172	6000	Bul.	9	—
							„	2168	3000	„	10	—
2272	Sept. 20	Bul.	1964	„	2	RD	Oct. 22	2153	6000	OTB	1	R†
2047	Sept. 27	„	2201	„	3	RD	1906. Oct. 17	1938	10	Ord.	62	R
2239	Oct. 11	„	2201	„	3	RD	Nov. 5	2208	5	Bul.	2	—
2425	1907. Jan. 30	OTB	2201	„	3	RD	1907. Jan. 10	2496	10	Ord.	63	R

R—Reaction. RD—Reaction with Dikkop. R†—Reaction and Died.
A mixture of Bulawayo and Tzaneen Serum.

ANALYSIS FROM PRECEDING TABLE.

8 horses, immunised with Bulawayo virus, were tested as follows:—

4 horses were hyperimmunised with Bulawayo: 1 had a reaction.

1 horse was hyperimmunised with Tzaneen: Reaction and died.

1 horse, 1st hyperimmunised with Tzaneen. 2nd tested with O, and

3rd hyperimmunised with OTBLPW: Reaction with 2nd test.

1 horse, hyperimmunised with OTB: Reaction and died.

1 horse, 1st tested with O, and 2nd hyperimmunised with OTB:

Distinct reaction with 1st test and doubtful reaction with 2nd test.

3 horses, immunised with horse virus 2201 (viz., Bulawayo virus passed through donkey 2208).

1 horse was tested with O: Reaction.

1 horse, 1st tested with O, 2nd hyperimmunised with OTB, and

3rd hyperimmunised with OTBLPW: Reaction with the 1st test.

1 horse, tested with O, 2nd tested with Tzaneen, and 3rd hyperimmunised with O: No reaction.

IMMUNISATION OF HORSES WITH BULAWAYO VIRUS.

TEST.					Result.	TEST.					Result.
Date of Injection.	Virus.					Date of Injection.	Virus.				
	No.	Qu.	Orig.	Gen.		No.	Qu.	Orig.	Gen.		
1906. Nov. 21	1938	c.c. 2	Ord.	62	R	1906. Dec. 7	2409	c.c. 9000	OTB LPW	1	—
Nov. 14	2401	9000	OTB	3	?						
1906. Nov. 21	2403	500	OTB	4	—	1906. Dec. 12	2416	8500	OTB LPW	2	—
1907. Jan. 22	2419	10	Tzn.	13	—	Jan. 29	2553	9000	Ord.	65	—

R—Reaction. ?—Doubtful.

SUMMARY OF RESULTS OF TESTS ON HORSES PREVIOUSLY IMMUNISED WITH BULAWAYO VIRUS.

No. of Horses.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
2	Ordinary Virus	2	—	—	—
2	Tzaneen	—	—	—	1
4	Bulawayo	1	—	—	—
2	OTB	—	—	1	1
1	OTBLPW	—	—	—	—

IMMUNISATION OF HORSES WITH VIRUS OF SPONTANEOUS
AND RELAPSE CASES.

Horse No.	IMMUNISATION.						TEST.					Result.
	Date of Injection.	Se-rum.	Virus.			Result.	Date of Injection.	Virus.				
			Orig.	No.	Orig.			Gen.	No.	Qu.	Orig.		Gen.
1402	1906. April 12	Ord.	1785	Turn-bull	1	?	1906. July 19	2058	c.c. 20	Tzn.	6	R†
1586	Feb. 28	"	1785	"	1	?	May 10	1918	5000	Turn-bull	6	—
							May 11	1937	3000	"	6	—
1666	"	"	1785	"	1	R	April 10	1901	9000	Ord.	41	—
1670	Mar. 24	"	1785	"	1	RD	May 10	1918	9000	Turn-bull	6	—
1829	Mar. 29	"	1785	"	1	RD	"	1938	9000	Ord.	62	—
1834	May 11	"	1785	"	1	R	June 15	1916	9000	"	45	—
							Aug. 26	2090	9000	Tzn.	9	R
1837	Feb. 28	"	1785	"	1	RD	April 11	1901	9000	Ord.	41	—
1867	Mar. 23	"	1785	"	1	RD	June 8	2006	9000	"	3	—
1868	"	"	1785	"	1	RD	May 3	1893	9000	Turn-bull	5	—
1872	Mar. 24	"	1785	"	1	R	May 10	1937	6000	"	6	—
							May 18	1962	3000	"	7	—
							Nov. 22	2403	6000	OTB	4	—
							Dec. 4	2418	3000	"	5	—
1963	May 12	"	1785	"	1	R	June 30	2040	3000	Tzn.	4	RD
							July 5	2056	6000	"	5	RD
							Dec. 7	1954	2	Bul.	1	—
1881	Mar. 23	"	1788	Dale	1	R	1906. May 11	1938	6000	Ord.	62	—
							"	1937	3000	Turn-bull	6	—
1860	May 11	"	1772	Warm-baths	1	RD	1906. June 30	2040	9000	Tzn.	4	R
1957	June 25	"	1772	"	1	R	Dec. 13	1954	2	Bul.	1	—
							Oct. 2	2298	9000	"	11	—

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop. R†—Reaction and Died.

IMMUNISATION OF HORSES WITH VIRUS OF SPONTANEOUS
AND RELAPSE CASES.

TEST.						TEST.					
Date of Injection.	Virus.				Result.	Date of Injection.	Virus.				Result.
	No.	Qu.	Orig.	Gen.			No.	Qu.	Orig.	Gen.	
1907.		c.c.									
Feb. 14	2635	3000	Ord.	68	—						
"	2636	6000	"	68	—						
1906.											
July 6	2056	2500	Tzn.	5	R						
"	2082	500	"	8	R						
Aug. 24	2090	6000	"	9	R						
Aug. 3	1869	1	"	1	—	1906.		c.c.			
Sept. 18	2168	3000	Bul.	10	—	Aug. 17	1964	1	Bul.	2	—
Sept. 29	2225	6000	"	3	—	1907.					
						Jan. 26	2556	9000	OTB LPW. Spont. C.	1	—
June 28	2026	3030	Tzn.	3	R	Feb. 14	2636	3000	Ord.	68	—
"	2033	3000	"	5	R	Feb. 20	2637	3000	"	69	—
July 5	2056	2000	"	5	R						
July 21	2060	10	Bul.	2	RD†						
July 6	2056	3000	Tzn.	5	RD†						
July 12	2060	9000	Bul.	2	RD	1906.					
						Sept. 4	2149	9000	Bul.	8	—
1907.											
Jan. 26	2599	6000	Spont.	1	—						
1906.											
Sept. 2	2152	3000	Tzn.	2	R	Nov. 21	1938	2	Ord.	62	—
Sept. 5	2151	6000	"	10	R						
190 .											
Feb. 7.14	2635	3000	Ord.	68	—						
Feb. 19	2637	3000	"	69	—						
1906.											
July 12	2060	6000	Bul.	2	RD†						
1906.											
Aug. 25	2090	6000	Tzn.	11	—	1906.					
Aug. 31	2152	3000	"	2	—	Nov. 21	1938	2	Ord.	62	R
1907.											
Feb. 7	2625	6000	Ord.	66	—						

R—Reaction. ?—Doubtful. RD—Reaction with Dikkop. RD†—Reaction. Dikkop and Died.

ANALYSIS FROM PRECEDING TABLE.

12 horses, immunised with virus Spontaneous Cases.

1 horse was twice hyperimmunised with O : No reaction.

1 horse, 1st hyperimmunised with O, and 2nd hyperimmunised with Tzaneen : Reaction when hyperimmunised with Tzaneen.

1 horse, 1st hyperimmunised with O, 2nd hyperimmunised with Tzaneen, and 3rd hyperimmunised with O : Reaction when hyperimmunised with Tzaneen.

1 horse, hyperimmunised with O, and 2nd tested with Bulawayo : Reaction, dikkop, and died.

1 horse, 1st hyperimmunised with O, 2nd tested with Tzaneen, 3rd tested with Bulawayo, 4th hyperimmunised with Tzaneen, 5th hyperimmunised with Bulawayo, and 6th hyperimmunised with Spont. C.-OTBLPW : Reaction when hyperimmunised with Tzaneen.

1 horse was tested with Tzaneen : Reaction and died.

1 horse, 1st hyperimmunised with Tzaneen, 2nd hyperimmunised with Tzaneen, 3rd tested with O, 4th tested with Bulawayo, and 5th hyperimmunised with O : Reaction and dikkop with 1st hyperimmunised Tzaneen, and reaction with 2nd hyperimmunised Tzaneen.

1 horse was hyperimmunised with Spont. C. : No reaction.

1 horse, 1st hyperimmunised with Spont. C., and 2nd hyperimmunised with O : No reaction.

1 horse, 1st hyperimmunised with Spont. C., and 2nd hyperimmunised with Tzaneen : Reaction, dikkop, and died.

1 horse, 1st hyperimmunised with Spont. C., 2nd and 3rd hyperimmunised with Bulawayo, 4th hyperimmunised with OTB, and 5th hyperimmunised with Spont. C. : Reaction and dikkop with 2nd hyperimmunisation.

1 horse, 1st hyperimmunised with { Ord. } and 2nd hyperimmunised with Bulawayo : Reaction, dikkop, and died.

2 horses, immunised with virus Relapse Case.

1 horse, 1st and 2nd hyperimmunised with Tzaneen, 3rd tested with O, 4th tested with Bulawayo, and 5th hyperimmunised with O : Reaction with 1st hyperimmunised Tzaneen.

1 horse was hyperimmunised with Bulawayo : No reaction.

SUMMARY OF RESULTS OF TESTS ON HORSES PREVIOUSLY IMMUNISED
WITH VIRUS OF SPONTANEOUS AND RELAPSE CASES.

No. of Horses.	Tested with.	RESULT.			
		Reaction.	Reaction and Dikkop.	Doubtful Reaction.	Died.
7	Ordinary Virus	—	—	—	—
6	Tzaneen	4	1	—	2
5	Bulawayo	—	1	—	2
1	OTB	—	—	—	—
4	Spontaneous Case	—	—	—	—
1	Ord.-Spont. C.	—	—	—	—
1	OTBLPW-Spont. C... ..	—	—	—	—

Conclusions.

These experiments show conclusively that when a horse or mule is inoculated with a certain strain of virus, the animal, as a rule, is immune against that particular strain, but when the animal is tested or hyperimmunised at a later date with virus of a different strain, reactions and deaths are noted, thus proving that the immunity afforded by the first inoculation is in no way complete.

The following table shows the percentage of reactions (including doubtful reaction and dikkop) and deaths amongst the inoculated mules and horses included in the previous experiments. This table is compiled according to the number of the test (1st, 2nd, 3rd, etc.), and irrespective of the virus with which they were immunised or tested, and will serve as an indication of the results to be expected in practice.

It is particularly instructive as demonstrating the difference between the immunity in horses and mules when obtained under the same conditions.

PERCENTAGE OF REACTIONS AND DEATHS AMONGST INOCULATED
HORSES AND MULES WHEN TESTED.

Number of Test.	REACTIONS.		DEATHS.	
	Mules.	Horses.	Mules.	Horses.
	Per cent.	Per cent.	Per cent.	Per cent.
1st	2.4	18.0	1.8	10.5
2nd	2.8	11.6	Nil.	5.2
3rd	1.9	10.4	0.7	1.6
4th	2.5	4.4	0.3	2.2
5th	1.2	3.9	0.3	2.2
6th	Nil.	2.9	Nil.	0.6
7th	Nil.	2.3	Nil.	0.6
8th	—	0.6	—	Nil.
TOTAL	10.6	52.4	3.0	23.2