Horse-Sickness, Beginning.

Date.	Number.	Sex.	Age.	Condition	Temperature.		Blood.			Serum.			
					Morning. F.	Evening. F.	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° × 10^{-4}	Viscosity at 25° C.	Amount of Serum (Blood=1)
11/6/08	3302	Gelding	8 yrs.	—	102·0	104·2	25	3·26	1·0451	1·0256	142·4	1·79	$^{3}/_{5}$
24/6/08	3400	,,	10 ,,	Fairly good	101·6	103·4	29	—	1·0490	1·0270	140·5	—	$^{3}/_{5}$
25/6/08	3450	,,	11 ,,	Good	100·6	105·8	31	3·58	1·0487	1·0256	141·1	—	$^{1}/_{3}$
25/6/08	3630	Mare	11 ,,	Very good	100·2	103·2	38	3·84	1·0529	1·0246	144·6	1·76	$^{3}/_{5}$
17/10/07	2915	—	—	—	101·0	99·4	38	—	—	1·0282	148·8	—	—
15/10/07	2917	—	—	—	103·0	103·2	27	—	—	1·0265	149·8	—	—
25/2/08	3091	—	—	—	101·8	104·0	34	—	—	1·0279	142·9	—	—

(2) Horses Suffering from Horse-Sickness.

Horses suffering from horse-sickness have lower average values with all methods applied, only the average volume of blood corpuscles is a little higher than in normal horses. During the climax of the disease also the viscosity is supernormal besides the volume. The relative blood stasis in the jugular vein, accompanied by accumulation of CO_2 in highly sick animals, explains this phenomenon. As the majority of simply sick animals (66 per cent.) has a subnormal blood viscosity (and volume percentage of globules) it is to be understood that the average can be lower than the normal average. The variations of both series of values are excessive, viz., of the volume of globules in nearly double, of the viscosity in more than double the latitudes under normal circumstances. (Compare chapter on Viscosity.) Similar reflections hold good for the specific gravity of blood.

While the maxima of volume of erythrocytes and maxima and minima of viscosity and specific gravity of *blood* exceed the respective normal limits, the highest pathological *serum* values never reach the supreme top elevations, but the minima of diseased serum go beyond the normal minima.

Date.	Number.	Sex.	Age.	Condition.	Temperature.		Blood.			Serum.					Day of Disease.	Clinical Observations.	Pulse.
					Morning.	Evening.	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° C. × 10^{-4}	Viscosity at 25° C.	Surface Tension at 37° C.	Amount of Serum (Blood = 1).			
9/6/08	3522	Gelding	8 yrs.	—	103·0	102·2	30	—	1·0448	1·0248	138·3	1·78	—	$^{2}/_{5}$	11	—	52
9/6/08	3586	,,	Aged	—	101·6	103·0	28	—	1·0468	1·0237	139·9	1·76	—	$^{2}/_{5}$	11	—	46
10/6/08	3572	,,	,,	—	102·2	104·8	27	—	10·446	1·0226	143·7	1·69	6·16	$^{2}/_{5}$	12	—	44
10/6/08	3362	,,	12 yrs.	—	101·2	103·4	25	3·14	1·0452	1·0253	139·8	1·82	6·40	$^{1}/_{2}$	12	—	48
10/6/08	3583	,,	7 ,,	—	101·8	102·6	34	—	1·0506	1·0255	141·8	1·96	6·35	$^{2}/_{5}$	12	—	40
10/6/08	3570	,,	10 ,,	—	104·6	105·8	30	3·33	1·0459	1·0243	143·1	1·80	6·25	$^{2}/_{5}$	12	—	42
10/6/08	3586	,,	Aged	—	100·6	99·0	39	4·44	1·0522	1·0221	141·1	1·61	—	$^{1}/_{5}$	12	Dikkop	46
10/6/08	3571	,,	16 yrs.	—	102·8	103·8	29	3·45	1·0467	1·0236	142·7	1·68	6·40	$^{2}/_{5}$	10	—	44
11/6/08	3582	,,	Aged	—	102·0	103·0	29	3·71	1·0481	1·0234	146·4	—	—	$^{1}/_{5}$	13	Dikkop	44
11/6/08	3587	,,	,,	—	102·2	103·8	35	3·62	1·0485	1·0231	141·2	1·76	—	$^{1}/_{3}$	10	,, ? just before death	50
11/6/08	3572	,,	,,	—	102·2	103·6	30	3·54	1·0456	1·0208	143·1	1·65	—	$^{2}/_{5}$	13	Dikkop	48
11/6/08	3362	,,	12 yrs.	—	101·4	102·4	25	—	1·0451	1·0252	142·9	1·89	—	$^{2}/_{5}$	13	—	46
12/6/08	3572	,,	Aged	—	101·6	100·0	38	—	1·0506	1·0215	140·3	1·69	—	$^{1}/_{3}$	14	Dikkop; died next day	46
12/6/08	3605	,,	,,	—	103·2	104·2	$37\frac{1}{2}$	—	1·0512	1·0234	138·1	1·81	—	$^{2}/_{5}$	9	—	54
12/6/08	3302	,,	8 yrs.	—	103·2	105·8	25	3·05	1·0443	1·0246	140·1	1·79	5·91	$^{2}/_{5}$	14	—	80
12/6/08	3519	,,	Aged	—	104·0	105·6	29	3·75	1·0483	1·0259	136·6	2·03	—	$^{2}/_{5}$	9	—	54
13/6/08	3250	,,	10 yrs.	—	103·0	104·8	34	3·82	1·0501	1·0234	142·8	1·74	—	$^{2}/_{5}$	10	—	42
13/6/08	3570	,,	10 ,,	—	104·0	101·6	44	4·55	1·0537	1·0210	142·1	1·71	—	$^{2}/_{5}$	15	—	52
13/6/08	3557	,,	7 ,,	—	102·0	104·8	26	3·39	1·0456	1·0251	139·7	1·82	—	$^{1}/_{2}$	15	—	60
16/6/08	3591	,,	10 ,,	—	101·6	97·0	58	7·39	1·0655	1·0221	144·0	1·67	—	$^{1}/_{10}$*	10	Died next night	72
16/6/08	3590	,,	13 ,,	—	102·0	105·4	$30\frac{1}{2}$	—	1·0484	1·0257	138·5	1·91	—	$^{2}/_{5}$	10	—	32
16/6/08	3616	,,	16 ,,	—	103·0	104·0	$38\frac{1}{2}$	—	1·0497	1·0219	139 7	1·63	—	$^{2}/_{5}$	11	—	72
16/6/08	3547	,,	16 ,,	—	101·8	103·0	40	4·51	1·0510	1·0212	139·8	1·64	—	$^{2}/_{5}$	11	Died next night	52
16/6/08	3607	Stallion	14 ,,	—	102·2	103·0	32	3·79	1·0463	1·0247	146·8	1·75	—	$^{2}/_{5}$	11	Died next day	—
16/6/08	3250	Gelding	10 ,,	—	103·2	103·4	50	—	1·0589	1·0200	137·6	—	—	$^{1}/_{10}$	13	Dikkop	70
19/6/08	3254	,,	6 ,,	Exceed. poor	103·2	104·6	36	5·48	1·0540	1·0254	148·2	1·92	—	$^{1}/_{5}$	8	—	78
19/6/08	3480	,,	11 ,,	Fairly good	102·0	102·0	41	4·15	1·0498	1·0204	137·8	1·58	—	$^{1}/_{5}$	16	—	78

19/6/08	3608	,,	8 ,,	Fairly good	105·0	105·2	38½	3·87	1·0498	1·0218	139·6	1·54	—	1/5 *	16	Dikkop	66
19/6/08	3372	,,	8 ,,	Very good	103·2	103·6	36½	4·54	1·0531	1·0260	137·7	1·83	—	1/5 †	5	Hyper. ‖	54
19/6/08	3199	,,	8 ,,	Rather poor	103·0	102·8	33	5·03	1·0552	1·0284	130·9	2·07	—	1/5 *	6	—	60
20/6/08	3408	,,	Aged	Very good	104·2	103·6	38½	4·80	1·0541	1·0243	136·2	—	—	1/3	—	Died next day. Hyper. ‖	—
20/6/08	3306	,,	9 yrs.	Rather poor	103·2	103·0	25	3·89	1·0474	1·0270	144·6	—	—	2/5	6	—	—
20/6/08	3608	,,	8 ,,	Fairly good	103·0	100·4	49	4·37	1·0549	1·0198	138·5	1·54	5·67	1/10	17	Dikkop ; died next night	70
20/6/08	3479	,,	10 ,,	Good	102·6	103·0	26	3·22	1·0439	1·0234	144·2	—	—	2/5	30	—	—
20/6/08	3411	,,	10 ,,	Very poor	103·4	100·0	53½	7·39	1·0652	1·0238	142·4	1·84	4·98	1/5 ‡	3	Died next night Hyper. ‖	—
20/6/08	3372	,,	8 ,,	Very good	103·2	103·2	37	5·23	1·0546	1·0256	141·2	1·99	5·10	1/5 †	6	Hyper. ‖ Urine dark	—
24/6/08	3457	,,	10 ,,	,,	105·8	104·6	29	3·09	1·0461	1·0234	141·5	1·84	5·97	2/5	5	—	—
24/6/08	3517	,,	13 ,,	Rather poor	102·2	105·0	32½	3·39	1·0469	1·0252	143·5	1·80	5·69	2/5	9	—	38
24/6/08	3445	,,	8 ,,	Good	103·0	105·4	27½	3·39	1·0475	1·0252	141·8	2·02	5·97	2/5	9	—	36
25/6/08	3457	,,	10 ,,	Very good	105·0	105·8	33	3·86	1·0474	1·0234	141·1	1·70	—	1/5 §	6	—	44
25/6/08	3338	,,	12 ,,	Rather poor	102 4	105·0	34½	3·75	1·0522	1·0247	143·7	1·75	—	1/2	6	—	—
25/6/08	3539	,,	13 ,,	Good	103·0	105·0	29	3·37	1·0468	1·0239	142·9	1·69	—	1/2	6	—	—
25/6/08	3627	Mare	9 ,,	Fairly good	104·0	103·8	30½	3·36	1·0476	1·0244	142·1	—	—	2/5	10	—	46
25/6/08	3631	,,	12 ,,	Good	102·0	104·8	32½	—	1·0503	1·0243	141·8	—	—	2/5	10	—	44
25/6/08	3635	Gelding	10 ,,	Fairly good	102·2	104·6	36½	3·83	1·0503	1·0234	143·2	1·72	—	1/3	10	—	30
29/6/08	3539	,,	13 ,,	,,	101·8	102·8	33½	3·62	1·0500	1·0209	142·0	1·58	—	2/5	10	—	—
30/6/08	3630	Mare	11 ,,	Good	105·4	105·0	38½	3·46	1·0528	1·0232	149·0	—	—	1/3	15	—	72
2/7/08	3675	Gelding	13 ,,	Rather poor	101·8	—	30	3·01	1·0459	1·0225	141·3	—	—	1/5	5	Died during the day	—
2/7/08	3710	,,	12 ,,	Good	101·8	104·0	31	3·44	1·0498	1·0254	140·5	—	—	1/3	6	—	46
3/7/08	3356	,,	11 ,,	,,	100·8	103·0	30½	2·92	1·0479	1·0248	146·0	—	—	1/10	18	—	46
3/7/08	3702	,,	13 ,,	Rather poor	100·2	103·6	32	3·35	1·0507	1·0270	144·2	—	—	2/5	7	—	—
3/7/08	3340	,,	7 ,,	Fairly good	101·0	101·6	23½	3·28	1·0443	1·0255	143·3	—	—	2/5	3 ?	—	—
3/7/08	3704	,,	16 ,,	,,	102·0	103·6	30	2·69	1·0469	1·0237	140·9	—	—	2/5	7	—	26
3/7/08	3630	Mare	11 ,,	Good	103·0	105·4	52	4·76	1·0604	1·0179	147·6	—	—	1/5	18	—	82
10/7/08	3662	Gelding	Aged	Rather poor	99·8	99·6	47	—	1·0541	1·0191	135·1	—	—	1/10	14	Dikkop ; died next night	50
20/10/07	2915	—	—	—	103·2	103·4	36	—	—	1·0260	144·1	—	—	—	12	—	—
29/10/07	2917	—	—	—	104·0	105·0	27	—	—	1·0242	145·1	—	—	—	11	—	—
8/9/07	2975	—	—	—	104·6	106·4	27	—	—	1·0265	141·2	—	—	?	?	—	52
8/9/07	2961	—	—	—	—	—	45	—	—	1·0244	138·9	—	—	—	?	Dikkop ; died during the day	—
28/2/08	3091	—	—	—	103·0	104·0	31	—	—	1·0279	147·4	—	—	—	15	—	—

* Coagulated. † Red brown. ‡ Reddish. § Orange. ‖ Attack of Horse-sickness following Hyperimmunisation.

Date.	Number.	Sex.	Age.	Condition.	Temperature.		Blood.			Serum.					Number of days from the date of infection.	Clinical Observations.	Pulse.
					Morning.	Evening.	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° × 10^{-4}	Viscosity at 25° C.	Index of Refraction at 37° C.	Amount of Serum (Blood=1),			
10/6/08	3569	Gelding	15 yrs.	—	104·0	102·4	28	3·90	1·0473	1·0251	137·9	—	—	1/3	12	—	50
11/6/08	3522	,,	8 ,,	—	99·8	101·0	28	3·28	1·0460	1·0232	146·3	1·69	—	1/5	13	Dikkop	46
12/6/08	3582	,,	Aged	—	101·2	100·0	33½	3·67	1·0477	1·0216	142·9	—	—	1/5*	14	,,	48
12/6/08	3584	,,	6 yrs.	—	101·2	101·2	40½	5·28	1·0572	1·0300	140·5	2·37	—	1/3	8	—	—
12/6/08	*3522*	,,	8 ,,	—	100·0	101·0	29½	3·46	1·0469	1·0237	143·9	1·68	—	2/5	14	Dikkop	44
12/6/08	3571	,,	16 ,,	—	101·2	100·6	38	3·46	1·0493	1·0210	146·0	1·66	—	2/5	12	,,	—
13/6/08	3362	,,	12 ,,	—	99·4	104·0	26½	3·60	1·0444	1·0238	150·3	1·75	—	1/3	15	—	44
16/6/08	3302	,,	8 ,,	—	102·0	102·8	(31)	—	1·0444	1·0218	145·5	—	—	1/5	18	—	50
29/6/08	3459	,,	10 ,,	Good	100·4	101·2	36	3·12	1·0473	1·0190	137·5	—	—	1/10†	10	Dikkop	74
29/6/08	3631	Mare	12 ,,	,,	100·4	100·0	42	3·88	1·0546	1·0199	141·7	1·56	1·34226	1/5	14	—	50
29/6/08	3635	Gelding	10 ,,	Fairly good	99·0	101·0	46	4·76	1·0570	1·0200	140·3	1·53	—	1/3	14	Dikkop; died next night	36
29/608	3338	,,	12 ,,	,,	100·6	101·0	31	3·26	1·0478	1·0228	142·1	1·70	1·34419	1/3	10	—	—
30/6/08	3445	,,	8 ,,	Good	100·0	100·8	37	3·18	1·0492	1·0208	140·8	—	—	1/3	15	Dikkop	34
30/6/08	3400	,,	10 ,,	Fairly good	102·0	101·4	38	—	1·0479	1·0189	139·6	—	—	2/5	15	,,	70
1/7/08	3539	,,	13 ,,	Good	99·0	100·8	30½	—	1·0459	1·0207	144·0	—	—	1/3	12	,,	—
2/7/08	3465	,,	6 ,,	Fairly good	99·0	102·2	23	2·31	1·0412	1·0223	149·5	—	—	2/5	13	—	—
2/7/08	3457	,,	10 ,,	Very good	101·0	101·8	27½	2·93	1·0415	1·0201	135·7	—	1·34423	1/3‡	13	Dikkop disap.	50
3/7/08	3634	Stallion	8 ,,	,,	100·8	100·4	42½	4·02	1·0559	1·0232	146·7	—	—	1/2	18	,,	30
3/7/08	*3400*	Gelding	10 ,,	Fairly good	102·0	103·8	(25½)	2·70	(1·0415)	1·0208	136·5	—	—	2/5‡	18	,,	78
3/7/08	*3445*	,,	8 ,,	Good	100·2	100·6	(28½)	2·81	1·0459	1·0225	148·9	—	1·346538	2/5	18	,,	—
8/7/08	3340	,,	7 ,,	Fairly good	101·4	100·2	23½	—	1·0450	1·0257	141·8	—	—	2/5	8	—	—
8/7/08	3702	,,	13 ,,	Rather poor	101·2	101·8	33½	—	1·0503	1·0237	147·7	—	—	2/5	12	Dikkop ?	28
8/7/08	3704	,,	16 ,,	Fairly good	101·6	102·0	34	—	1·0485	1·0211	144·0	—	—	1/3	12	,, ,,	32
10/7/08	*3702*	,,	13 ,,	,,	100·6	101·6	37	—	1·0514	1·0212	147·4	1·58	1·34358	2/5	14	,, ,,	38
10/7/08	*3704*	,,	16 ,,	Rather poor	99·0	100·2	35½	—	1·0476	1·0193	144·7	1·49	1·34213	2/5	14	,, ,,	34
10/7/08	3705	,,	Aged	Good	99·8	101·0	36½	—	1·0503	1·0198	140·8	1·63	1·34366	2/5	14	,, ,,	64
10/7/08	3706	,,	18 ,,	Fairly good	99·2	100·4	36½	—	1·0484	1·0203	145·7	1·62	1·34308	2/5	14	,, ,,	32
10/7/08	3707	,,	11 ,,	Rather poor	101·6	101·0	26	—	1·0445	1·0239	141·3	1·79	1·34529	1/2	14	—	48
10/7/08	3667	,,	Aged	Good	99·0	99·0	53	—	1·0615	1·0193	138·1	—	1·34324	1/10†	14	Dikkop	60
10/7/08	3668	,,	17 yrs.	,,	99·2	99·2	37	—	1·0509	1·0209	138·5	—	1·34395	1/5	14	,,	48
10/7/08	3663	,,	13 ,,	,,	101·2	100·0	32	—	1·0454	1·0191	139·5	—	1·34301	1/5	14	,,	56
13/7/08	*3704*	,,	16 ,,	Fairly good	101·0	100·8	25	3·14	1·0426	1·0218	144·3	1·67	1·34374	2/5	17	,,	42
14/7/08	(*3706*)	,,	18 ,,	,,	99·0	Anus open	(27)	3·28	—	1·0217	147·7	1·68	1·34372	2/5	18	,, disap.	—

* Coagulated. † Orange. ‡ Opalescent. § Second half of temperature reaction.

Passed through Horse-Sickness Attack.

Date.	Number.	Sex.	Age.	Condition.	Temperature.		Blood.			Serum.					Number of days from the date of Infection.	Clinical Observations.	Pulse.
					Morning.	Evening.	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at $37° \times 10^{-4}$	Viscosity at 25° C.	Index of Refraction at 37° C.	Amount of Serum (Blood=1).			
9/6/08	3579	Gelding	8 yrs.	—	Norm.	Norm.	29	—	1·0485	1·0267	137·8	1·96	—	1/3	11	—	48
13/6/08	3522	,,	8 ,,	—	,,	,,	28	3·48	1·0468	1·0248	143·0	1·86	—	1/2	15	Dikkop disap.	42
25/6/08	3306	,,	9 ,,	Fairly good	,,	,,	27½	3·72	1·0474	1·0264	139·9	1·96	—	2/5	11	—	—
29/6/08	3450	,,	11 ,,	Good	,,	,,	27½	2·95	—	1·0245	146·2	1·96	1·34481	1/5	10	—	—
1/7/08	3338	,,	12 ,,	Rather poor	,,	,,	33½	3·16	1·0499	1·0231	149·4	—	—	2/5	12	—	—
1/7/08	*3450*	,,	11 ,,	Good	,,	,,	33½	—	1·0500	1·0256	148·4	—	—	2/5	12	—	—
2/7/08	3487	,,	12 ,,	Fairly good	,,	,,	40½	4·19	1·0553	1·0228	150·0	—	—	2/5	13	—	—
2/7/08	3449	,,	Aged	Exceed. poor	,,	,,	28½	2·97	1·0453	1·0210	149·8	—	—	1/3	13	—	—
2/7/08	3475	,,	6 yrs.	Good	,,	,,	27	2·86	1·0457	1·0242	147·8	—	1·34456	2/5	13	—	—
3/7/08	3679	,,	Aged	Rather poor	,,	,,	29	3·00	1·0466	1·0253	141·1	—	—	2/5	7	—	—
8/7/08	3356	,,	11 yrs.	Good	,,	,,	28	—	1·0469	1·0243	142·6	—	—	1/5	23	—	—
10/7/08	3701	,,	10 ,,	,,	,,	,,	32	—	1·0496	1·0259	147·0	1·85	1·34689	2/5	14	—	36
13/7/08	3663	,,	13 ,,	,,	,,	,,	28	3·23	1·0440	1·0218	148·0	1·60	1·34311	2/5	17	Dikkop	42
13/7/08	3668	,,	17 ,,	,,	,,	,,	31	3·85	1·0484	1·0232	140·7	1·69	1·34473	2/5	—	—	—
16/6/08	*3522*	Gelding	8 yrs.	—	Norm.	Norm.	27½	3·55	1·0472	1·0256	146·2	1·83	—	2/5	18	—	—
16/6/08	3582	,,	Aged	—	,,	,,	19½	—	1·0377	1·0220	141·7	1·69	—	2/5	18	Dikkop disap.	—
25/6/08	3372	,,	8 yrs.	Good	,,	,,	32	3·25	1·0444	1·0200	128·8	1·58	—	1/5	11	,, ,,	—
29/6/08	3627	Mare	9 ,,	Rather poor	,,	,,	31	3·08	1·0488	1·0249	148·0	1·69	—	2/5	14	—	—
30/6/08	3625	Gelding	7 ,,	Fairly good	,,	,,	31	—	1·0508	1·0249	149·9	—	—	1/2	15	—	—
2/7/08	*3627*	Mare	9 ,,	,,	,,	,,	27	3·00	1·0470	1·0243	149·0	—	1·34473	2/5	17	—	—
8/7/08	3634	Stallion	8 ,,	Very good	,,	,,	42	—	1·0551	1·0243	150·9	—	1·34576	1/3	23	—	—
8/7/08	*3449*	Gelding	Aged	Exceed. poor	,,	,,	28½	—	1·0451	1·0226	150·0	—	—	2/5	19	—	—
8/7/08	3465	,,	6 yrs.	Rather poor	,,	,,	24	—	1·0456	1·0259	146·0	—	1·34642	2/5	19	—	—
10/7/08	3400	,,	10 ,,	Fairly good	,,	,,	24	—	1·0460	1·0274	140·3	2·06	1·34784	2/5	25	Dikkop disap.	—
13/7/08	*3701*	,,	10 ,,	Good	,,	,,	31	3·98	1·0490	1·0274	138·4	1·99	1·34743	2/5	17	—	40

Horse-Sickness—Examinations on one and the same Animal on Different Days.

Date.	Number.	Sex.	Age.	Condition.	Temperature.		Blood.			Serum.					Day of Disease.	State of Sickness.	Clinical Observations.	Pulse.
					Morning.	Evening.	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° × 10^{-4}	Viscosity at 25° C.	Index of Refraction at 37° C.	Amount of Serum (Blood = 1).				
26/6/08	3702	Geld.	13 yrs.	Fairly good	Norm.	Norm.	31½	3·28	1·0503	1·0272	148·2	1·79	—	1/3	—	Before inj.	—	—
3/7/08	,,	,,	,,	Rather poor	100·2	103·6	32	3·35	1·0507	1·0270	144·2	—	—	2/5	7	Climax	—	—
8/7/08	,,	,,	,,	,,	101·2	101·8	33½	—	1·0503	1·0237	147·7	—	—	1/3	12	End	Dikkop ?	28
10/7/08	,,	,,	,,	,,	100·6	101·6	37	—	1·0514	1·0212	147·4	1·58	1·34358	2/5	14	,,	Dikkop	38
13/7/08	,,	,,	,,	,,	Norm.	Norm.	37½	3·86	1·0518	1·0217	140·0	1·67	1·34386	2/5	17	Past	Heart failure	36
26/6/08	3704	Geld.	16 yrs.	Fairly good	Norm.	Norm.	32½	3·71	1·0489	1·0253	143·4	1·74	—	1/2	—	Before inj.	—	—
3/7/08	,,	,,	,,	,,	102·0	103·6	30	2·69	1·0469	1·0237	140·9	—	—	2/5	7	Climax	—	26
8/7/08	,,	,,	,,	,,	101·6	103·0	34	—	1·0485	1·0211	144·0	—	—	1/3	12	End	Dikkop	32
10/7/08	,,	,,	,,	,,	99·0	100·2	35½	—	1·0476	1·0193	144·7	1·49	1·34213	2/5	14	,,	,,	34
13/7/08	,,	,,	,,	,,	Norm.	Norm.	25	3·14	1·0426	1·0218	144·3	1·67	1·34374	2/5	17	,,	,,	42
24/6/08	3457	Geld.	10 yrs.	Very good	104·6	106·6	29	3·09	1·0461	1·0234	141·5	1·84	—	2/5	5	Climax	—	—
25/6/08	,,	,,	,,	,,	105·0	106·0	33	3·86	1·0474	1·0234	141·1	1·70	—	1/3*	6	,,	—	44
29/6/08	,,	,,	,,	Good	100·4	101·2	36	3·12	1·0473	1·0190	137·5	—	—	1/10*	10	End	Dikkop	74
2/7/08	,,	,,	,,	Very good	101·0	101·8	27½	2·93	1·0415	1·0201	135·7	—	1·34423	1/3†	13	,,	,, disap.	50
24/6/08	3400	Geld.	10 yrs.	Fairly good	101·6	103·4	29	—	1·0490	1·0270	140·5	—	—	2/5	9	Beginning	—	38
30/6/08	,,	,,	,,	,,	100·0	102·0	38	—	1·0479	1·0189	139·6	—	—	2/5	15	End	Dikkop	70
3/7/08	,,	,,	,,	,,	102·0	103·8	25½	2·70	1·0415	1·0208	136·5	—	—	2/5	18	,,	,,	78
10/7/08	,,	,,	,,	,,	Norm.	Norm.	24	—	1·0460	1·0274	140·3	2·06	1·34784	2/5	25	Past	,, disap.	—
9/6/08	3522	Geld.	8 yrs.	—	103·0	102·2	30	—	1·0448	1·0248	138·3	1·78	—	2/5	11	Climax	—	52
11/6/08	,,	,,	,,	—	99·8	101·0	28	3·28	1·0460	1·0232	146·3	1·69	—	2/5	13	End	Dikkop	46
12/6/08	,,	,,	,,	—	100·0	101·0	29½	3·46	1·0469	1·0237	143·9	1·68	—	2/5	14	,,	,,	44
13/6/08	,,	,,	,,	—	Norm.	Norm.	28	3·48	1·0468	1·0248	143·0	1·86	—	1/2	15	Past	,, disap.	42
16/6/08	,,	,,	,,	—	,,	,,	27½	3·55	1·0472	1·0256	146·2	1·83	—	2/5	18	,,	—	—

* Orange. † Opalescent.

Horse-Sickness—Averages from all Experiments.

	Blood.				Serum.				
	Temperature. F.	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° × 10^{-4}	Viscosity at 25° C.	Surface Tension at 37° C.	Index of Refraction at 37° C.
Number of examinations	194	100	85	90	100	100	83	23	15
„ animals	62	72	58	57	62	62	67	23	14
Average	*102·3*	*34*	*3·68*	*1·0494*	*1·0233*	*142·3*	*1·78*	*5·85*	*1·34368*
Average for normal horses	100·5	33·4	3·80	1·0521	1·0261	146·8	1·83	5·95	—
Difference from average for normal horses	+1·8 %	+1·8 %	−3·2 %	−0·26 %	−0·27 %	−3·1%	−2·7 %	−1·7 %	—
Maximum	106·4	58	7·39	1·0655	1·0300	150·3	2·77	6·17	1·34653
Minimum	97·0	23	2·70	1·0412	1·0189	130·9	1·49	4·98	1·34213
	%	%	%	%	%	%	%	%	%
Variation above average	4·0	70·5	100·5	1·53	0·65	5·6	56	5·5	0·21
„ below „	4·2	32·5	26·5	0·78	0·43	8·0	16	14·9	0·12
„ total	8·2	103	127	2·31	1·08	13·6	72	20·4	0·33
„ above normal average	5·9	74	94	1·27	0·38	2·4	51	3·7	—
„ below „ „	3·5	31	29	1·04	0·70	10·8	19	16·3	—
Values above average	—	46	40	42	56	47	52	65	53
„ below „	—	54	60	58	44	53	48	35	47
„ above normal average	—	49	34	23	10	12	35	48	—
„ below „ „	—	51	66	77	90	87	65	52	—

Specific gravity, conductivity, viscosity, surface tension, of a greater number of sick than of normal horses, range below the respective normal averages. The limits of variations of all serum values of sick horses are wider than normal. The index of optical refraction, compared with that of 3682 and 3685, seems to be subnormal.

More normal values for comparison are yet missing.

An arrangement of the values of sick horses, according to the latitudes of variations, in descending order :—

Viscosity blood, vol. blood corp., viscosity serum, surface tension serum, conductivity, specific gravity blood, specific gravity serum, index of refraction,

gives the same series as normal horses.

Though horse-sickness is not a disease of the erythrocytes it provokes a slight decrease of them, which is specially distinct when the attack has passed and the temperature is normal again. The recovery of the globules follows very slowly, and so it happens that even immune horses, examined weeks or months after the sickness, do not give an average of the volume of blood corpuscles that is equal to the normal.

Besides loss of erythrocytes, general impoverishment of the blood liquid takes place, emphasised by decrease of the specific gravity and viscosity of the serum. This points to a diminution of colloids ; and the falling of the conductivity indicates a decrease of the electrolyte-concentration as well.

Specific gravity, viscosity, and conductivity of serum recover quicker than specific gravity of blood and volume of corpuscles, for the former values have regained normal height in immune horses.

AVERAGE VALUES FROM VARIOUS STAGES OF HORSE-SICKNESS COMPARED WITH THE AVERAGES OF NORMAL AND IMMUNE HORSES.

	Blood.						Serum.					
	Volume of Blood Corpuscles.		Viscosity at 25° C.		Specific Gravity at 37° C.		Specific Gravity at 37° C.		Viscosity at 25° C.		Conductivity at 37° × 10^{-4}	
	*		*		*		*		*		*	
Normal horses	100	33·4	90	3·80	48	1·0521	50	1·0261	81	1·83	50	146·8
Horse-sickness, climax	60	34·3	43	3·95	55	1·0500	60	1·0238	39	1·77	60	141·7
„ end	33	33·3	19	3·48	32	1·0483	33	1·0218	15	1·69	33	143·0
„ past	25	30·0	15	3·35	24	1·0475	25	1·0244	13	1·83	25	144·8
„ immunised and hyperimmunised ..	40	32·1	14	3·80	18	1·0500	20	1·0262	14	1·90	20	146·1

* These columns contain the numbers of examinations.

TABLE SHOWING THE FREQUENCY OF MINIMUM, AVERAGE, AND MAXIMUM VALUES IN NORMAL HORSES AND IN THE VARIOUS STAGES OF HORSE-SICKNESS.

			Normal.	Horse-Sickness.			
				Climax.	End.	Past.	Immune and Hyper-immune.
Volume of Blood Corpuscles.	Below normal minimum	22	% 0 = 0	% 0 = 0	% 0 = 0	% 1 = 4	% 0 = 0
	„ „ average	33·4	52 = 52	33 = 55	16 = 49	20 = 80	12 = 60
	Above „ „	33·4	48 = 48	27 = 32	15 = 45	4 = 16	8 = 40
	„ „ maximum	43	0 = 0	8 = 13	2 = 6	0 = 0	0 = 0
Blood. Specific Gravity at 37° C.	Below normal minimum	1·0447	% 0 = 0	% 4 = 7	% 7 = 22	% 3 = 12	% 1 = 6
	„ „ average	1·0521	26 = 54	36 = 66	20 = 63	19 = 80	12 = 66
	Above „ „	1·0521	22 = 46	13 = 24	4 = 12	2 = 8	5 = 28
	„ „ maximum	1·0605	0 = 0	2 = 3	1 = 3	0 = 0	0 = 0
Blood. Viscosity at 25° C.	Below normal minimum	2·95	% 0 = 0	% 2 = 4	% 4 = 21	% 1 = 7	% 0 = 0
	„ „ average	3·80	37 = 41	23 = 54	10 = 53	11 = 73	6 = 43
	Above „ „	3·80	53 = 59	15 = 35	4 = 21	3 = 20	8 = 57
	„ „ maximum	5·27	0 = 0	3 = 7	1 = 5	0 = 0	0 = 0

Serum. Viscosity at 25° C.	Below normal minimum	1·55	0 = 0 %	2 = 5 %	2 = 13 %	0 = 0 %	0 = 0 %
	„ „ average	1·83	51 = 63	26 = 67	12 = 80	5 = 39	3 = 21
	Above „ „	1·83	30 = 37	21 = 28	0 = 0	8 = 61	10 = 72
	„ „ maximum	2·13	0 = 0	0 = 0	1 = 7	0 = 0	1 = 7
Serum. Specific Gravity at 37° C.	Below normal minimum	1·0226	0 = 0 %	15 = 25 %	23 = 70 %	4 = 16 %	0 = 0 %
	„ middle between {minimum / average} ..	1·02435	6 = 12	19 = 31	7 = 21	8 = 32	3 = 15
	„ normal average	1·0261	20 = 40	21 = 35	2 = 6	9 = 36	6 = 30
	Above „ „	1·0261	21 = 42	4 = 7	0 = 0	4 = 16	9 = 45
	„ middle between {average / maximum} ..	1·02835	3 = 6	1 = 2	1 = 3	0 = 0	2 = 10
	„ normal maximum	1·0306	0 = 0	0 = 0	0 = 0	0 = 0	0 = 0
Conductivity at $37° \times 10^{-4}$	Below normal minimum	140·5	0 = 0 %	20 = 33 %	9 = 27 %	5 = 20 %	0 = 0 %
	„ middle between {minimum / average} ..	143·65	12 = 24	25 = 42	8 = 25	5 = 20	5 = 25
	„ normal average	146·8	19 = 38	10 = 17	10 = 31	3 = 12	8 = 40
	Above „ „	146·8	13 = 26	5 = 8	6 = 18	12 = 48	7 = 35
	„ middle between {average / maximum} ..	153·6	6 = 12	0 = 0	0 = 0	0 = 0	0 = 0
	„ normal maximum	160·4	0 = 0	0 = 0	0 = 0	0 = 0	0 = 0

3.—Immune and Hyperimmune Horses (against Horse-Sickness).

Immunised and Hyperimmunised.

Date.	Number.	Sex.	Age.	Condition.	Blood.			Serum.					Pulse.
					Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° C × 10^{-4}	Viscosity at 25° C.	Surface Tension at 37° C.	Amount of Serum (Blood=1)	
9/6/08	1162	Gelding	11 yrs.	—	32	—	1·0508	1·0271	145·7	1·90	—	1/2	26
9/6/08	1288	,,	17 ,,	—	31	—	1·0495	1·0287	143·8	1·98	—	1/2	28
9/6/08	1085	Mare	Aged	—	39	—	1·0537	1·0264	144·2	1·88	—	1/2	26
9/6/08	1660	Gelding	,,	—	23	—	1·0444	1·0263	153·2	1·89	—	1/2	28
9/6/08	1672	,,	,,	—	42	—	1·0574	1·0273	150·0	1·89	—	1/2	29
13/6/08	1972	,,	,,	—	32½	3·77	1·0506	1·0268	142·5	1·99	5·44	1/2	24
13/6/08	1293	,,	,,	—	24½	3·29	1·0451	1·0259	149·0	1·85	5·91	1/2	27
13/6/08	3451	,,	6 yrs.	—	30	3·50	1·0481	1·0241	150·2	1·92	5·83	1/2	26
22/3/08	2903	—	—	—	35	—	1·0501	1·0273	148·5	—	—	—	40
17/6/08	3081	Gelding	11 yrs.	Very poor	34½	—	1·0497	1·0259	142·0	—	—	1/2	40
17/6/08	3408	,,	Aged	Very good	34½	—	1·0539	1·0263	143·7	1·95	6·07	1/2	40
17/6/08	3411	,,	10 yrs.	Very poor	36	—	1·0530	1·0250	145·8	2·18	6·27	1/2	40
17/6/08	3444	,,	11 ,,	Fairly good	35½	—	1·0503	1·0236	143·3	—	—	2/5	40
17/6/08	3449	,,	Aged	Very poor	30½	3·34	1·0475	1·0231	146·6	1·72	5·94	1/3	50
18/6/08	3465	,,	6 yrs.	Poor	24	—	1·0450	1·0257	145·7	—	—	1/2	40
18/6/08	3493	,,	14 ,,	Fairly good	28½	—	1·0476	1·0258	141·9	—	—	1/2	40
24/7/08	3340	,,	7 ,,	,,	27½	—	1·0485	1·0268	147·7	—	—	2/5	24
24/7/08	3583	,,	7 ,,	,,	32	—	1·0539	1·0296	142·1	—	—	2/5	24
23/11/07	2915	—	—	—	36	—	—	1·0271	146·5	—	—	—	45
21/11/07	2917	—	—	—	26	—	—	1·0252	149·0	—	—	—	45

Date.	Number.	Sex.	Age.	Condition.	Remarks.	Blood.			Serum.				
						Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° C × 10^4	Viscosity at 25° C.	Surface Tension at 37° C.	Amount of Serum (Blood = 1).
17/6/08	3408	Geld.	Aged	Very good	Injected forty days ago	34½	—	1·0539	1·0263	143·7	1·95	6·07	½
18/6/08	,,	,,	,,	,,	Infused 10,000 c.c. the day before	42	—	1·0568	1·0284	139·4	—	—	½
17/6/08	3411	Geld.	10 yrs.	Very poor	Injected forty days ago	36	—	1·0530	1·0250	145·8	2·18	6·27	½
18/6/08	,,	,,	,,	,,	Infused 10,000 c.c. the day before	37	—	1·0538	1·0258	137·9	—	—	½
26/6/08	3076	Geld.	17 yrs.	Rather poor	Hyperimmunised five months ago; nine times bled since; bled last time four weeks ago	29	3·30	1·0471	1·0248	147·8	1·84	—	⅓
,,	,,	,,	,,	,,	Infused 5,000 c.c.; bled half an hour afterwards	29½	3·43	1·0468	1·0251	143·0	1·85	—	⅖
27/6/08	,,	,,	,,	,,	Infused 10,000 c.c. the day before	34	3·79	1·0524	1·0268	143·9	2·04	—	½
2/7/08	,,	,,	,,	,,	,, ,, six days ago	29	3·56	1·0492	1·0262	141·6	2·01	5·68	⅖
26/6/08	3079	Geld.	12 yrs.	Fairly good	Hyperimmunised five months ago; nine times bled since; bled last time four weeks ago	28	3·02	1·0464	1·0244	148·9	1·80	5·82	½
,,	,,	,,	,,	,,	Infused 5,000 c.c.; bled half an hour afterwards	30	2·97	1·0454	1·0251	142·7	1·77	5·19	½
27/6/08	,,	,,	,,	,,	Infused 10,000 c.c. the day before	32½	2·99	1·0487	1·0262	142·3	—	—	⅖
2/7/08	,,	,,	,,	,,	,, ,, six days ago	31½	3·09	1·0478	1·0246	143·6	—	—	⅖
27/6/08	3119	Geld.	12 yrs.	Rather poor	Infused 5,000 c.c. the day before	31½	3·74	1·0505	1·0269	148·8	1·97	5·78	½
,,	,,	,,	,,	,,	,, 5,000 c.c.; bled half an hour afterwards	27	3·18	1·0483	1·0262	149·7	1·82	5·81	½
28/6/08	,,	,,	,,	,,	,, 10,000 c.c. on June 26 and 27 ..	28	—	1·0470	1·0254	139·0	1·91	—	⅖
2/7/08	,,	,,	,,	,,	,, 10,000 c.c. ,, ,, ..	24	3·04	1·0444	1·0252	142·9	1·90	5·85	⅖
27/6/08	3146	Geld.	11 yrs.	Poor	Infused 5,000 c.c. the day before	36½	3·78	1·0532	1·0263	143·7	1·93	5·57	½
,,	,,	,,	,,	,,	,, 5,000 c.c.; bled half an hour afterwards	34½	3·00	1·0524	1·0262	143·5	1·86	5·75	½
28/6/08	,,	,,	,,	,,	,, 10,000 c.c. on June 26 and 27 ..	40	—	1·0561	1·0275	146·2	2·01	—	½
2/7/08	,,	,,	,,	,,	,, 10,000 c.c. ,, ,, ..	31	3·28	1·0490	1·0255	139·7	1·80	5·44	⅖
24/7/08	3340	Geld.	7 yrs.	Fairly good	Injected twenty-four days ago	27½	—	1·0485	1·0268	147·7	—	—	⅖
26/7/08	,,	,,	,,	,,	Infused 10,000 c.c. on July 24 and 25 ..	31	—	1·0515	1·0283	147·2	—	—	⅖

Immune and Hyperimmunised Horses—Averages from all Experiments.

	Blood.			Serum.			
	Volume of Blood Corpuscles.	Viscosity at 25° C.	Specific Gravity at 37° C.	Specific Gravity at 37° C.	Conductivity at 37° × 10^{-4}	Viscosity at 25° C.	Surface Tension at 37° C.
Number of examinations	40	14	18	20	20	14	10
„ animals	37	12	18	20	20	14	10
Average	*32·1*	*3·80*	*1·0500*	*1·0262*	*146·1*	*1·90*	*5·89*
„ for normal horses	33·4	3·80	1·0521	1·0261	146·8	1·83	5·95
Difference from average for normal horses	−3·9 %	0	−0·20 %	−0·01 %	−0·5 %	+3·8 %	−1·0 %
Maximum	42	4·70	1·0574	1·0296	153·2	2·18	6·27
Minimum	23	3·05	1·0444	1·0231	141·9	1·72	5·44
	%	%	%	%	%	%	%
Variation above average	31	32·5	0·70	0·33	4·8	14·5	6·5
„ below „	28	11·0	0·53	0·30	2·9	9·5	7·6
„ total	59	43·5	1·23	0·63	7·7	24	14·1
„ above normal average	26	32·5	0·50	0·34	4·4	19	5·4
„ below „ „	31	11	0·73	0·29	3·3	6	8·6
Values above average	48	57	50	55	45	43	50
„ below „	52	43	50	45	55	57	50
„ above normal average	45	57	28	55	35	36	20
„ below „ „	55	43	72	45	65	64	80