

PART II.

PHYSICAL—CHEMICAL INVESTIGATIONS INTO SOUTH AFRICAN DISEASES.

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A.—VOLUME OF BLOOD CORPUSCLES.

THE percentage of the volume of blood corpuscles in comparison to the total volume of blood is found by centrifugalisation of a given volume of fresh blood until the level of the deposit remains constant. With our centrifuge and a speed of 4000–5000 revolutions pro minute this is the case after five minutes. The average error of this method amounts to about 0·3 volume per cent. absolute, or 1 per cent. in 100. Therefore the exactitude reached is greater than when counting the number of blood corpuscles, and, besides that, only a quarter of the time is needed.

The following table shows the average values of the volumes of blood corpuscles of horses in various conditions, donkeys and sheep, and the respective variations :—

PERCENTAGE OF VOLUME OF RED BLOOD CORPUSCLES.

	NORMAL DONKEYS.	NORMAL SHEEP.	HORSES,			
			Normal.	Horse- sickness.	Immune and Hyper- immune.	Piro- plasmosis.
Number of examinations	18	8	100	100	40	30
" animals	8	8	100	72	37	15
<i>Average</i>	32·8	40·4	33·4	34	32·1	27·6
" for normal animals	—	—	33·4	33·4	33·4	33·4
Difference from average for normal animals	—	—	0	+1·8 %	-3·9 %	-17·5 %
Maximum	41	43	43	58	42	34
Minimum	20·5	36	22	23	23	20
%	%	%	%	%	%	%
Variation above average	25	65	29	70·5	31	23
" below	37·5	11	34	32·5	28	27·5
" total	62·5	17·5	63	103	59	50·5
" above normal average	—	—	29	74	26	1·8
" below	—	—	34	31	31	40
Values above average	56	37	48	46	48	57
" below	44	63	52	54	52	43
" above normal average	—	—	48	49	45	7
" below	—	—	52	51	55	93