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The influence of sweat baths on the composition of the blood.

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The present series of observations was carried out to throw some light on the blood changes due to sweat baths (electrical bath) in various patients. The factors determined were the change in hemoglobin (with the initial value arbitrarily put at 100 per cent) the protein concentration of the serum, the osmotic pressure (freezing point depression) and the conductivity of the serum corrected for protein influence. The duration of the sweat bath was thirty minutes and no water was given. The blood was drawn from a cubital vein immediately before and after the bath. The results on eight patients—of which one was examined twice—were in brief as follows:

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Case	Diagnosis	Date	Time of Bleeding	Serum protein		Freezing point of Serum		Corrected NaCl equivalent of serum conduct		Percentile change in Hemoglobin*
				gm. per 100 cc.	percentile change	°C	percentile change	gm. per 100 cc.	percentile change	
M. C. B. 1	Chronic Nephritis	May 3	Before bath	6.8	+13.2	0.560	+2.7	0.809		
			After bath	7.7		0.575		0.827	+2.2	+2
A. G. 2	Hypertension Nephritis	May 8	Before bath	7.1	+ 8.5	0.565	0	0.800		
			After bath	7.7		0.565		0.807	+0.8	+5
M. Z. 3	Neuritis	May 24	Before bath	7.3	+ 8.2	0.560	+2.7	0.798		
			After bath	7.9		0.575		0.807	+1.1	+3
K. K. 4	Nephritis	June 12	Before bath	7.5	+ 6.7	0.560	+1.8	0.802		
			After bath	8.0		0.570		0.819	+2.1	+5
M. C. B. 5=1	Chronic Nephritis	Sept. 18	Before bath	7.9	+ 2.5	no det'n		0.836		
			After bath	8.1				0.835	-0.1	+1
N. S. 6	Rheumatism	May 17	Before bath	7.9	+ 5.1	0.555	+0.9	0.793		
			After bath	8.3		0.560		0.805	+1.5	+4
C. K. 7	Chronic Fibrositis	May 10	Before bath	8.0	+ 3.8	0.555	0	0.791		
			After bath	8.3		0.555		0.797	+0.8	+1
C. E. 8	Chronic Nephritis	May 8	Before bath	8.3	+ 6.7	0.560	+1.8	0.797		
			After bath	8.9		0.570		0.809	+1.5	+5
B. F. 9	Hypertension	May 15	Before bath	9.0	0	0.575	0	0.821		
			After bath	9.0		0.575		0.824	+0.4	0
			Average		+6.1		+1.2		+1.1	+2.9

*All the absolute hemoglobin percentages on these patients lie between 90 and 110.

The conclusion may be drawn that the changes in the different constituents of the blood are not proportionate inasmuch as the protein concentration generally increases more than either the total electrolytes, the total dissolved substances or the hemoglobin. Concerning the relation between the hemoglobin and the serum protein change, it must be remembered that if the water-loss comes from the serum, which is roughly 50 per cent of the blood, then the increase in serum protein should be double the increase in hemoglobin; this is very nearly true in our average figures (6.1 and 2.9). It is also evident that the degree of concentration occurring as a result of the bake, if measured by the change in serum protein content, tends to be larger the lower the initial serum protein content. The fluid lost from the serum in excess of that gained from the tissues appears to be a salt solution of lower concentration than the serum.

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Studies on the chemistry of cod liver oil.*

I. The effect of hydrogenation upon the vitamine content.

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A survey of the literature reveals comparatively little on the hydrogenation of cod liver oil. Drummond,¹ working with whale oil, hydrogenated at 250° C. for 4 to 6 hours, found that the hardened oil was entirely deficient in "fat-soluble A," which at that time was generally also regarded as the "antirachitic vitamin". Since then the bulk of evidence has tended to show that

*This investigation was started in January, 1922, and is still being continued.

¹ Drummond, J. C., *Biochem. J.*, 1919, xiii, 81.