theory, namely, the direct effect of the sex hormone upon the nervous system.

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TRANSMISSION AND DIFFRACTION OF LIGHT BY NORMAL SERUM AS A FUNCTION OF THE TEMPERATURE

THE present paper is a résumé of the results obtained by a further step in the systematical study of the psychochemical changes undergone by normal blood serum as a function of temperature.

We have shown previously[1] that: first, an absolute minimum of the viscosity was observed around 56° C., and that the specific viscosity increased rapidly after 58°; second, that the levo-rotatory power, unaffected by temperature up to 55° (for ten minutes' heating) increased abruptly, and that the increase, up to a certain point, was proportional to the temperature. Measurement of the amounts of light absorbed, and scattered at right angle by the molecules and particles in the serum, brought new evidence of the deep physicochemical changes which take place around 55°. The table expresses the results of one series of experiments. (Figures express the readings.)

Heated for	0	5	10	20	40	60 min.	
Temperature			52°				
Transmission	57,5	57,5	57,5	57,5	57,5	57,5	
Diffusion	125	125	125	125	125	125	
Temp.			55°				
Transmission	57,5	57,5	57,5	57,5	57,5	57,5	
Diffusion	125	125	125	125	125	125	
Temp.			57°				
Transmission	57,5	57,5	58,0	58,0	59,0	60,0	
Diffusion	125	125	117	108	95	88	
Temp.			58°				
Transmission	57,5	57,5	58,0	58,5	61,0	61,0	
Diffusion	125	122	115	105	83	83	
Temp.			60°				
Transmission	57,5	57,5	58,0	60,0	63,0	70,0	
Diffusion	125	105	96	85	75	56	
Temp.			62°				
Transmission	57,5	59,0	60,0	65,0	90,0	101,0	
Diffusion	125	95	83	65	53	46	(coag)
Temp.			64°				
Transmission	57,5	60,0	63,0	96,0	140,0		
Diffusion	125	90	73	56	48	(coag)	

In both cases (transmission and diffusion) the figures are proportional to $\log \frac{I_0}{I}$, I_0 being the incident light, and I the transmitted or the scattered light. In the case of scattered light, the ratio $\frac{I_0}{I}$ for a reading of 125 is approximately equal to $\frac{1.000.000}{1}$. This table shows plainly that, if the optical density of the solution, $\log \frac{I_0}{I}$, increases slowly after 55° is reached, the same ratio decreases very rapidly when it applies to the diffracted light. (Of course, *decreasing* figures express *increases* in the amount of scattered light.)

Ten minutes' heating at 55° determines no increase in the scattered light, but ten minutes at 60° increases it roughly threefold. By applying Lord Rayleigh's formula connecting the amount of scattered light to the volume of the scattering particle, it is possible to express the increase in scattered light in terms of increased volume of the particle.

When this is done, and the data for different temperatures plotted against the time of heating, curves are obtained which show a decided tendency towards flattening when forty minutes are reached. On the contrary, if the same data are plotted against temperature, the curves are parallel and the increase in volume of particles, when the serum is heated for five, ten, twenty and forty minutes, is very nearly proportional to the temperature; *i.e.*, an increase in temperature of one degree determines about the same increase in the volume of the particle, between 57° and 64° C., whether the heating has lasted ten, twenty, forty or sixty minutes. The proportionality is rigorous within the limits of experimental errors—for a heating of ten or twenty minutes. A discrepancy is observed when the heating is kept for forty and sixty minutes. These curves are parallel to those expressing the changes in rotatory power.

One of the practical conclusions to be drawn from these findings is that the study of diffracted light affords a much more sensitive method for the study of phenomena occurring in the serum than that of transmitted light.

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[1] P. L. du Noüy, *J. Gen. Physiol.*, 1929, xii, 363; Ann. Inst. Pasteur, 1928, xlii, 742 and 1929, xliii, 749; SCIENCE, 1929, lxix, 552.

BOOKS RECEIVED

CALVERT, ROBERT. *Diatomaceous Earth.* Pp. 251. 70 figs. 46 tables. Chemical Catalog. $5.00.

CHAMOT, ÉMILE MONNIN, and CLYDE WALTER MASON. *Handbook of Chemical Microscopy*—Volume I. Principles and Uses of Microscopes and Accessories—Physical Methods for the Study of Chemical Problems. Pp. xiii + 474. 162 figs. Wiley. $4.50.

MILLER, CASPER O. *The Ether in its Relation to the Structure of Matter.* Pp. 240. 35 figs. Henkel Press. $3.50.

RIES, H. *Economic Geology.* Sixth edition, revised. Pp. 860. 291 figs. Wiley. $6.00.