caused a very definite hyperglycemia. The rise of blood sugar with oxytocin is more prolonged but not as high as with vasopressin. The hyperglycemia after pituitrin is intermediate in degree between that of vasopressin and oxytocin. These 3 substances behave differently in their hyperglycemic activity after treatment with 2 N sodium hydroxide in the cold. In the case of vasopressin the sugar raising property is practically completely destroyed whereas the oxytocin and pituitrin are only partially injured in respect to this property. The extent of destruction appears to be less with pituitrin than with oxytocin. This may be due to the larger amount of protein present in the pituitrin.

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Orientation of Cylindroid Particles in Gelatin-Serum Gels.

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The phenomenon here described has been observed during the study of the cataphoresis of red cells and rouleaux in gelatin-serum sols and gels. The method of preparation of the suspension has been described elsewhere.[1]

The red cells of the horse, since they do not become coated with proteins in the manner of quartz particles when suspended in a soft gelatin-serum (2 to 3% gelatin) gel, have the remarkable property of migrating through a protein sol or gel. If cylindroids, consisting of red cells in rouleaux formation, are moved back and forth through such a sol or gel, by virtue of their cataphoretic mobility, no orientation of these cylindroid bodies occurs during the cataphoretic migration.

At the same time the gelatin and serum protein micellae are also in movement, as well as the liquid in the cataphoresis cell.[2] As gelation proceeds, the speed of the cylindroid bodies becomes much slower. In spite of the fact that the cylindroids have been moved back and forth in the cell over a considerable period, *i. e.*, 10 minutes, and even though they are apparently subjected to a laminary liquid stream, the orientation of the cylindroids is still at random

[1] Freundlich and Abramson, *Z. Phys. Chem.*, 1928, cxxxiii, 52. Abramson, *J. Gen. Phys.*, 1928, xi, 743.

[2] Abramson, "Colloid Symposium Monograph No. 6," in press.

with a tendency, however, to be placed in planes parallel to the horizontal plane of the cataphoresis cell. The current is now discontinued and gelation is permitted to proceed. After a considerable time interval (about 24 hours) during which time a stiff gel is formed, it is found that the cylindroid particles have been oriented so that their lengthwise axes are parallel to the lines of the current flow.* It is to be emphasized that the orientation takes place after the electric current has ceased to flow.

By making a more concentrated gel, one may observe the same phenomenon take place more rapidly when the sol and gel are sucked back and forth in the cell. For some time during gelation the orientation is at random when, suddenly, the cylindroids become oriented in the direction of the flow.

Hatschek has observed, in gelatin gels, the orientation of macroscopic lens-shaped gas bubbles perpendicular to the axis of an applied pressure. The same has been here observed for microscopic rouleaux arranged in parallel before the pressure is applied. Under such conditions, sucking on the cataphoresis cell may produce with proper gel consistency an orientation of the rouleaux perpendicular to their previous direction.

These experiments support the view that gelatin micellae form aggregates in thread-like arrangement in gel formation. The electrical and mechanical forces most probably produce an arrangement of these threads similar, say, to that which is known to take place in vanadium pentoxide sols under similar conditions. A gelatin gel which orients in parallel cylindroid particles previously arranged at random should be double refracting and may perhaps give an X-ray pattern. With increasing age of gel, the elasticity of fibers or threads making up the gel structure must increase and their length and diameter should become greater. During gelation, orientation is in all likelihood produced by the increase of directed intra-gel tensions, the direction of which is manifested by the rotation of the irregularly arranged cylindroid particles.

* This has been observed in 3 out of 6 fairly similar although not identical experiments.