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Light Transmission Through Blood Suspensions as Recorded by the Photo-electric Cell.

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In an attempt to find a method of securing accurate time curves of red blood corpuscle hemolysis by various hemolytic agents, an apparatus was devised in which a constant beam of light was passed through a dilute blood suspension contained in a revolving glass chamber. The emergent beam was allowed to fall on a potassium hydride photo-electric cell, and the current so set up in the cell was suitably measured.[1] Using, under standard conditions, supposedly unchanging blood suspensions in various isotonic fluids including saline, Brinkman's solution,[2] several modifications of it, a special phosphate solution, and a modified Locke's solution,[3] marked spontaneous variations in the emergent beam were noted during the first one to three hours after the preparation of the suspensions. Usually these variations consisted of a gradual progressive diminution in light intensity; sometimes an increase occurred.

Studies of the pH of the diluting fluids before and after the experiments revealed no relationship to the light transmissibility of the suspensions. Microscopic observations of the cell shape on flamed slides[4, 5] showed various types of crenation but no correlation between changes in cell shape and in light transmission. The cell volumes of the suspensions were determined in a special hematocrit, and in general light transmission varied inversely as total cell volume, but no definite quantitative relation could be determined.

The following technique was eventually developed to obtain a constant red cell suspension. Washed cells to represent 0.5 per cent whole blood were added sterilely to Brinkman's solution containing 0.1 per cent $NaHCO_3$, and allowed to stand 18-24 hours in paraffined flasks. All of 54 such suspensions showed less than 2 per cent change in light transmission during a three

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hour period. Of 21 control suspensions on which the light transmission was determined 15 minutes after dilution and again in 1 to 3 hours, only 14 showed no change. Similar experiments using isotonic saline showed a change in about one-third, both before and after standing. The cells after standing in the modified Brinkman's solution had assumed a spherical shape with numerous small delicate projections, and no further change in shape was detected during the period between determinations. Presumably they had reached an approximate equilibrium with the surrounding fluid. This method is being utilized at present in studying the rate of hemolysis of the red blood corpuscles by various hemolytic agents.

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A Comparison of Indifferent Substances and Specific Antigen in Production of Local Streptococcus Immunity.

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Our recent communication[1] which described a high grade of localized antistreptococcus protection in the pleural cavity of the rabbit induced by the previous injection of indifferent, non-antigenic substances, left in question the relation of this protection to a specific immunity which might be produced by the streptococcus. A thickened granulating parietal pleural wall containing large numbers of phagocytic clasmatocytes is produced by the inoculation three days previously of gum arabic broth or aleuronat-starch and such a cavity resists infection by many multiples of the normally fatal dose of our pathogenic streptococcus. The