monkey and that survival of the virus in this organ is exceptional, even within very short limits of time. With this agrees the absence of any demonstrable specific tissue lesion in the infected testicle. Finally, it is noteworthy that neither the testicle-infected monkeys nor the animals receiving testicular emulsion by intracerebral injection had acquired any active immunity.

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The Use of the Stuphenphotometer for Measuring Percentage Hemolysis.

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The methods for measuring percentage hemolysis may be divided into two classes, (1) subjective methods, such as those in which the observer adjusts the depth of a suspension until some object is just visible, or in which the hemolysing suspension is matched nephelometrically against standards, and (2) methods in which a photosensitive element,such as a potassium or selenium cell, a radiometer, or a thermopile, is used to measure the intensity of light transmitted by the suspension. The methods in the first group are unsatisfactory because too much depends on the judgment of the observer, and because rapid work is usually difficult or impossible; the photometers included in the second group, on the other hand, are usually unsatisfactory because of the difficulty in obtaining sensitivity and stability at the same time when the apparatus is so arranged as to make rapid consecutive readings possible. All methods, moreover, (except the radiometer method) are insensitive to changes in the range of 0% to 10% lysis. Ideally, the method used should be (a) capable of an accuracy of not less than $\pm 2\%$, even in the range from 0% to 10% hemolysis, (b) sufficiently rapid to allow readings at intervals as short as 5 seconds, and (c) perfectly reliable in the sense that its performance does not depend on factors which require continual control. This last condition virtually rules out any method which is not entirely optical.

These conditions are met by the use of the "Stuphenphotometer" ("Stupho"), a photometer recently designed by Pulfrich of Carl Zeiss, in conjunction with a simple device for containing the cell suspensions whose opacity is to be measured. This

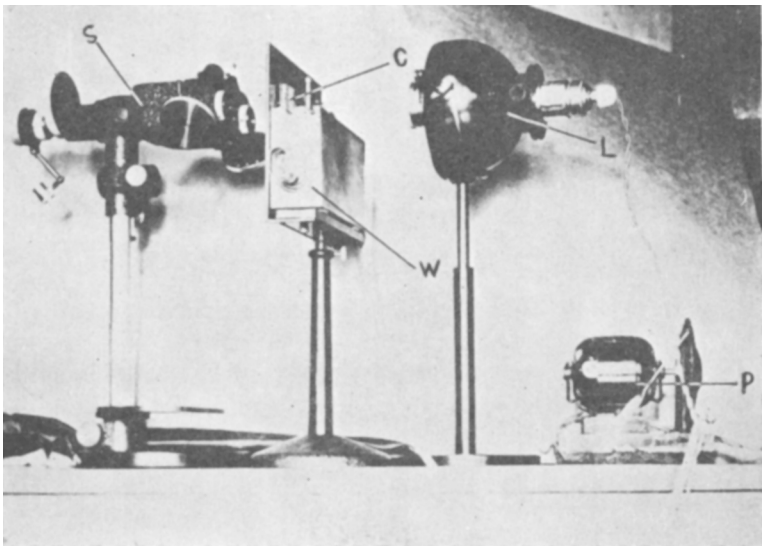

FIG. 1.

L—Stupho lamp; S—Stuphenphotometer; W—Water bath; C—one of the cells containing hemolytic system; P—air pump.

consists of a large electrically heated and thermostatically controlled water-bath, one side of which is prolonged upwards as a screen, and pierced with two holes, 1.6 cm. in diameter, which exactly correspond to the 2 circular openings of the "Stupho" which faces them. (See Fig.) Immediately behind one of these holes is a glass cell, 3 mm. x 2 mm. x 0.5 mm., while behind the other is a row of 3 similar cells, any one of which can be brought opposite the hole by turning a handle. The cells are arranged, moreover, so that the hole in the screen is completely covered when they contain 2.0 cc. of fluid, all light passing from the Stupho lamp through the hole into the Stupho first passing through the fluid; their total capacity, however, being 3.0 cc., additions to the hemolytic systems, of initial volume 2.0 cc., can be made at any time. The hemolytic systems are kept stirred by very fine jets of compressed air, delivered from a tiny pump. The water bath and cells are also provided with a cover, not shown in the figure.

The range of light intensity over which the Stupho works is enormous (2 intensities differing a thousand-fold can be matched quite easily); the whole range of hemolysis, from 0% to 100%, can, therefore, be measured with a single standard. This may be an unhemolysed suspension of "standard" strength (10^8 cells per 2 cc. of the hemolytic system), but is preferably a permanent standard

made by enclosing a piece of pink paper between 2 sheets of glass; this standard is then placed against the face of the single chamber which covers one of the two holes, while the chamber itself is filled with distilled water. A green filter, which enables very accurate readings to be made by the dark adapted eye, is used in the Stupho eyepiece. A series of readings for suspensions showing known degrees of lysis are given below, the right-hand drum, corresponding to the permanent standard, being set at 50. For each degree of lysis is shown (1) the reading of the Stupho left-hand drum, and (2) the greatest error made in a set of 10 successive readings, the error being expressed as a percentage of lysis. In the case of all readings, only 2 seconds was allowed for matching the fields of the Stupho; the table accordingly shows the precision of the instrument when working under this exacting condition.

TABLE I.

Lysis, %	Reading	Greatest Error in 10 Readings
0	82.1	1.5
10	68.5	2.4
20	56.4	2.5
30	44.0	3.0
40	33.0	2.2
50	23.5	2.3
60	16.1	2.0
80	7.3	1.9
100	1.44	1.8

The greatest error made in any single reading, when expressed as a percentage of lysis, thus never exceeds 3%, and further, the standard error of the successive readings is always found to be less than $\pm 0.5\%$; the precision of the method thus exceeds any used hitherto. Even were a smaller precision attained, however, the method would be much more useful in practice than existing methods by reason of its extreme simplicity.

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Sub-Threshold Hyperglycemia and Glycuresis.

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Folin[1] states that "Glycuresis is independent of the level of blood

[1] Folin, O., and Berglund, H., *J. Biol. Chem.*, 1922, li, 213.