

to support the body when resting. There was apparently no sensory disturbance of the extremities and no edema was observed.

A thick suspension of rice polishings was given through a tube when the paralysis was first observed and daily thereafter for a period of 5 days without any improvement. One of the chickens died 8 days after the onset of the paralysis. Sections of the nerve trunks have not yet been examined. Motion pictures were made to demonstrate the paralysis.

Further investigation is under way at the present time using a larger number of chickens and employing ginger with phenol, ginger without phenol, and ethyl alcohol. At the present time only those chickens receiving phenol ginger show leg weakness, 9 days after beginning the experiment.

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A New Method of Increasing the Precipitating Action of Syphilitic Serum.

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The practice of heating serum to 56°C. for 30 or more minutes unquestionably increases the precipitating ability of blood serum from syphilitics for the saline suspensions of lipoid-cholesterin antigens now used in the precipitin test for syphilis. Insistence upon the use of "inactivated" serum in such precipitin tests apparently began in 1918 by Sachs and Georgi,¹ and was followed by Meinicke in his third modification in 1919,² and by Dreyer and Ward³ in 1921, and Kahn⁴ in 1922.

It is rather paradoxical that heating of serum should lower the "specific" antibody titre utilized in the Wassermann reaction by 75%, as shown in the now classical researches of Noguchi,⁵ and simultaneously increase the precipitin titre by 8 times (from 10 to 80 Kahn units) as was recently shown by Kurtz⁶ in Kahn's laboratory. The explanation advanced by Dreyer³ of a complex anti-syphilitic antibody, composed of a thermostabile precipitin coupled

¹ Sachs and Georgi, *Med. Klin.*, 1918, xiv.

² Meinicke, E., *Munchen. Med. Wchnschr.*, 1919, xxxiii.

³ Dreyer, G., and Ward, H. K., *Lancet*, 1921, i, 956.

⁴ Kahn, R. L., *Archiv. of Dermat. and Syph.*, 1922, v.

⁵ Noguchi, H., *Serum Diagnosis of Syphilis*, J. B. Lippincott Co., Phil., 1910.

⁶ Kurtz, M. B., *J. Lab. and Clin. Med.*, 1930, xv, 7.

to a thermolabile substance which inhibits precipitins and favors complement fixation, is rather theoretical to say the least.

Kurtz quotes an apparently unpublished opinion by Nishio, a worker in Kahn's laboratory, "that the function of heating is to reduce the protective properties of the serum albumins to precipitation." This is a most plausible theory. By advancing another purely physical method of increasing the titre of the "specific" precipitin in serum the additional evidence may be sufficient to transfer this phenomenon to terms of a simple biochemical reaction.

Using my modification⁷ of Butler's antigen⁸ for the slide precipitation test for syphilis I have found that by allowing the serum to dry completely the precipitating action of syphilitic serum is increased to almost identically the same extent as when heated.

Pooled syphilitic serum was diluted with negative serum until a negative reaction was obtained with 0.15 cc. of the raw serum. A portion of this was inactivated at 56°C. for 30 minutes. Serial dilutions of both were made with normal saline, and 0.15 cc. of each dilution was placed on slides. When to be dried, the serum was spread over the middle third of the slide.

The antigen used for the dried serum was a 1 to 5 dilution of the following stock solution: Alcohol extract (1 to 10) of acetone defatted dried heart powder, 90 cc.; ethyl alcohol (98%), 10 cc.; 10% alc. sol. of repurified balsam of tolu, 4.5 cc.; 1% alc. sol. of benzoic acid, 1.25 cc.; cholesterin, 0.56 gm. For the plain and inactive serum a 1-4 dilution with normal saline.

0.2 cc. of the antigen suspension was added to each slide, mixing the antigen and serum immediately with a tooth pick. Readings were made at end of 5 minutes, during which time an occasional agitation of the mixture on the slides was made by tilting from side to side.

The results of a single experiment were as follows:

TABLE I.

Raw Serum	Heated Serum	Dry Serum	Serum Dilution	Fraction of 1 unit of (—) serum
No. ppt	Comp. ppt.	Comp. ppt.	None	1
" "	" "	" "	1-1	1/2
" "	" "	" "	1-2	1/3
" "	" "	" "	1-3	1/4
" "	Partial	Partial	1-4	1/5
" "	Slight	Partial	1-5	1/6
" "	None	None	Normal saline control	

⁷ Johns, F. M., *Proc. La. State Med. Soc., N. O. Med. and Surg. J.*, 1930.

⁸ Butler, H. W., *N. O. Med. and Surg. J.*, 1928, lxxxii, 15.

Serum albumin acting as a hydrated colloid, as pointed out so beautifully by Fischer,⁹ is able to form a fairly stable (emulsion) with any of the very delicately balanced precipitating systems used in serologic work. The slight upset to this balance of this system by partial coagulation of the albumin by heat (sufficient to produce a change in clarity when serum is properly inactivated) or the simple dehydration of the albumin by drying and then redissolving it removes the inhibiting effect to such an extent as to allow the full action of the precipitinogen. It is very doubtful if this "redissolved albumin" is as well hydrated or can function as well as it could in its natural state.

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CO₂ Combining Power of the Blood Plasma Before and After Ethylene Anesthesia in Diabetics Protected With Insulin.

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Formerly diabetics were regarded as very poor surgical risks. Not only was there fear of infection and poor healing but the effect of a general anesthetic was dreaded. Since the advent of insulin it has been shown that diabetics may be operated upon with almost the same degree of safety as normal individuals. Even in normal persons the administration of general anesthetics may produce an acidosis. The metabolism may be profoundly affected. The post-operative period of vomiting and starvation contribute still further to the threat of acidosis. The administration of a general anesthetic to a diabetic, therefore, has been in the past a matter of no small concern. In spite of this there have been apparently recorded in the literature few definite observations as to the alkali reserve of the blood in diabetics under anesthetics and afterwards. The only 2 references I have been able to find in the insulin era have been those of Rabinowitch¹ and McKittrick and Root.² The former gives data as to the pH and CO₂ combining power in 2 diabetics under ether. He does not state whether insulin was used. McKittrick and Root state:

⁹ Fischer, M. H., and Hooker, M. O., *Fats and Fatty Degeneration*, John Wiley & Sons, New York, 1917.

¹ Rabinowitch, I. M., *Current Researches in Anesthesia and Analgesia*, 1925, iv, 267.

² McKittrick, L. S., and Root, H. F., *Diabetic Surgery*, Lea & Febiger, 1928, 78.