ducing precipitins intra-peritoneally on successive days. Such a method apparently gave rise to a potent precipitating serum and they claim equally successful results in producing hemolysins. These results as regards hemolysins were not confirmed in a later communication by Bonhoff and Tsuzuki.[1]

We have found that one can obtain uniformly a sufficiently potent hemolytic serum for fixation tests by immunizing rabbits with washed sheep blood in a dose of one to two cubic centimeters administered intravenously on three successive days. The hemolytic titer of such a serum *four days after the third injection* is usually 1 to 2,000. In other words, it is possible to produce a thoroughly reliable hemolytic serum in one week by this method.

Further details of this intensive method of immunizing to produce hemolytic sera and also its use in producing precipitins, bacteriolysins, agglutinins, and antitoxins will form the basis of a more extensive communication to be published in the Pathological series of the University of California Publications.

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Note on the effect of the internal secretions upon the secretion of epinephrin.

By ISAAC OTT and JOHN C. SCOTT.

One[2] of us was the first to show that the adrenal secretion relaxed and inhibited the rhythmic contractions of the intestine. Hoskins has shown that a dilution of 1–400 millions of epinephrin inhibits the rhythmic contractions. It thus becomes the most sensitive test for the presence of epinephrin. We tested its presence by the Magnus method. We injected a few grains of the filtered solution of the different glands into the jugular of the narcotized cat, and drew off, as Cannon has done, some blood from the vena cava above the openings of the adrenal veins, and defibrinated it. Normal blood defibrinated was then applied to a segment of the intestine of a narcotized rabbit and its rhythmic movements recorded. Then the blood, after the injection of the glandular filtrate, was applied to the same intestine and its move-

[1] Bonhoff and Tsuzuki, *Zeitschrift für Immunitatsforschung.*, IV, page 180.

[2] *Medical Bulletin*, 1897, p. 376.

ments registered. It was found that the injection of iodothyrin, parathyroid, infundibulin, thymus and pineal caused a distinct fall in tonus and inhibition of rhythmic contractions, showing the presence of epinephrin beyond normal in the blood. Normal blood of the cat never produces this effect, but stimulates tonus and rhythmic contraction. We have been careful to exclude albumen in these glandular tests, as the foreign albumen in the antithyroid serum of Möbius and in the diphtheritic antitoxic serum in 2 drop doses increases the amount of epinephrin in the blood. As cholin also produces an epinephrin reaction we can only be certain that iodothyrin and infundibulin stimulate the adrenals.

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Standardization of the Wassermann reaction. Attempts to prepare a standard antigen and antibody.

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For some time past we have endeavored to determine more exactly the nature of the Wassermann reaction. This led us first to an investigation of the antigen. In this connection Noguchi, and we ourselves, have shown the importance of the substances contained in the acetone precipitate. Incidentally, we have found that an antigen containing these substances (lipoids) is available for use after a period of two years. The exact steps in the production of this antigen differ in certain details from methods heretofore published. The method will appear, shortly, elsewhere. The next step in the work was an effort to produce an antibody to this relatively stable antigen. Three attempts have been made and all were unsuccessful. No evidence of antibody formation could be shown by means of the reaction of fixation or the precipitin reaction. *These lipoid substances were found not to act as antigens.*

Had the production of an antibody been possible, the standardization of the Wassermann reaction could have been accomplished. This was the ultimate object of the work. No method