phoretic pattern did not differ essentially from that of serum from a horse that had been producing pneumococcic antiserum for ten years. We have also found no significant difference on electrophoresis between tetanus antitoxic sera drawn from horses four and 30 months after beginning hyperimmunization.

Recently we have completed the electrophoretic study of the sera of horses hyperimmunized with a number of antigens of bacterial origin. Some have shown with more or less prominence the T-component absent in normal sera; others have shown no T but, like our pneumococcic antisera, an enhanced γ-glubulin peak. Antitoxic sera against Cl. welchii, Cl. sordelli and Cl. oedematiens, as well as against C. diphtheriae and Cl. tetani show large T components. Scarlet fever, botulinus, staphylococcus, histolyticus and vibrion septic antitoxic sera have also contained some T-globulin. In certain of these sera there has been more T than γ, in others it has been present in small amounts only. The amount of γ in these sera has been greater than in normal sera. Several antisera against the meningococcus have resembled our antipneumoncoccic sera both in the extraordinarily large amounts of γ and in the absence of detectable amounts of T. Sera against the organisms of hemolytic septicemia and swine erysipelas have also been very rich in γ. The latter serum has shown a small amount of a component having approximately the mobility of T. A serum against the Shiga and Flexner strains of dysentery bacteria has contained both T and a moderately enhanced γ. These various sera have been taken, some from freshly immunized horses, others from old serum producers.

All these results make it clear that horses respond to some antigens by an increase in the already existing γ-globulins, to others by the production of a new T component. In the experiments here reported all antitoxic sera have contained T while the most impressive increases in γ have been seen in anti-carbohydrate sera. More work will, however, be needed before we can specify those qualities of an antigen which determine the production of a T or a γ antibody.

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ON THE URINARY EXCRETION OF "FREE" SULFAPYRIDINE

CERTAIN theories relative to the mode of action of the sulfanilamide series of drugs involve oxidation-reduction mechanisms. We have isolated a monohydroxyl derivative of sulfapyridine from dog urine following the administration of the drug. The compound melts at 180°–181° (corr.) and depresses the melting point of sulfapyridine. The ultra-violet absorption data are shown in Fig. 1. The compound gives a

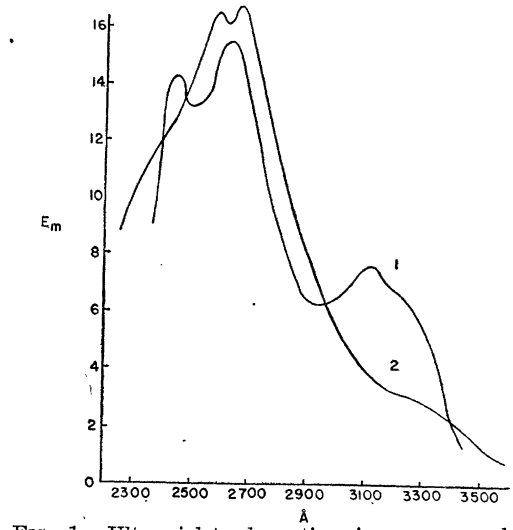

FIG. 1. Ultra-violet absorption in aqueous solution. 1. Sulfapyridine. 2. Hydroxy-sulfapyridine.

positive diazo and ferric chloride reaction.

Calculated for $C_{11}H_{11}O_3N_3S$:
C = 49.81; H = 4.15; N = 15.84.
Found:
C = 50.33; H = 4.26; N = 15.96.

A glucuronate of this substance has been isolated and characterized as its silver salt.

Calculated for $C_{11}H_9O_2N_3SAg \cdot OC_6H_8O_6Ag \cdot 3H_2O$:
C = 28.77; H = 3.24; N = 5.92: Ag = 30.46; H_2O = 7.61.
Found:
C = 28.98; H = 3.38; N = 5.73; Ag = 30.16; H_2O = 6.85.

Since the hydroxy-sulfapyridine glucuronate is very water-soluble, this product is of interest in relation to the problem of the formation of renal calculi.

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