of the capillaries makes the blood-brain barrier permeable to some extent for the antibodies and if these can attack the virus early in the incubation period they may neutralize the virus. Once the virus has had a chance to multiply and produce a reaction in the body in form of fever no results were obtained from hyperpyrexia if large infective doses were injected. Experiments not yet concluded on monkeys infected with small doses indicate that the size of initial dose is of great importance.

7979 P

Estrogenic Dihydroxy Compounds in the Urine of Pregnant Mares.

OSKAR WINTERSTEINER, ERWIN SCHWENK, AND BRADLEY WHITMAN. (Introduced by H. T. Clarke.)

From the Department of Biological Chemistry, College of Physicians and Surgeons, Columbia University, and the Research Laboratories of the Schering Corporation (Bloomfield, N. J.)

Schwenk and Hildebrandt[1] described the isolation from the urine of pregnant mares of a new compound of high estrogenic potency. This substance, designated by them δ-follicular hormone, melted at 209°, gave a characteristic purple color when coupled with p-nitrodiazobenzene and showed a gold yellow fluorescence in concentrated sulfuric acid solution. Analysis of the compound itself and of its mono-benzoate indicated the composition $C_{18}H_{22}O_2$. Treatment with ketone reagents failed to give characteristic derivatives.

Another batch of pregnant mare's urine has now been worked up in the laboratories of the Schering Corporation (Bloomfield, N. J.). The compound present in largest amount in the crude fraction containing the phenol-alcohols is the above δ-follicular hormone. Analysis of the present preparation gave figures agreeing better with $C_{18}H_{24}O_2$ than with $C_{18}H_{22}O_2$. The preparation of a di-p-nitrobenzoate (m.p. 260° uncorr.) leaves no doubt that both oxygen atoms are present in the form of hydroxyl groups.

A second substance isolated is apparently identical with the lower melting member (m.p. 174° uncorr.) of the pair of isomeric hydroxyphenols ("α-dihydrofollicular hormone") which Schwenk and Hildebrandt[2] obtained by reduction of theelin. It shows the same

[1] Schwenk, E., and Hildebrandt, F., *Naturwis.*, 1932, **20**, 658.

[2] Schwenk, E., and Hildebrandt, F., *Naturwis.*, 1933, **21**, 177.

characteristic blue fluorescence in sulfuric acid solution as the dihydrofollicular hormone and gives no depression of melting point when mixed with the latter. Furthermore, a small amount of a compound melting at 236° (uncorr.) which is more difficultly soluble in absolute methyl alcohol than the δ-hormone could be separated from the top fractions of the latter. The amount of the 2 last-named substances isolated was not sufficient for analysis and the preparation of derivatives.

The above findings establish for the first time the occurrence of estrogenic dihydroxy compounds in the urine of pregnant mares. Schwenk and Hildebrandt[2] have suggested that the dihydro-follicular hormone, which is about 6 times as active as theelin, may be the estrogenic substance actually circulating in the body fluids.* In this connection it may be pointed out that the only estrogenic substance which has been isolated in pure form from a mammalian organ, the emmenin obtained by Collip and his collaborators[3] from the placenta, has been shown by Butenandt and Browne[4] to be identical with theelol, the non-ketonic trihydroxy compound also present in human pregnancy urine. It is also conceivable that the very high degree of estrogenic potency reported by Zondek[5] for stallion's urine is at least partly due to the presence of substances of purely alcoholic character.

7980 P

Urinary Excretion of Vitamin C in Pneumonia.

E. HARDE, I. A. ROTHSTEIN, AND H. D. RATISH. (Introduced by J. G. M Bullowa.)

From the Littauer Pneumonia Research Fund, New York University, Harlem Hospital Station.

In previous work[1] on the tissues of laboratory animals we have

* The recent announcement of MacCorquodale, Thayer and Doisy at the 29th Annual Meeting of the American Society of Biological Chemists in Detroit, April 13, 1935, of the isolation from follicular fluid of dihydrotheelin (m.p. 173°, corr.) furnishes additional evidence for the correctness of this viewpoint.

3 Collip, J. B., *Can. Med. Ass. J.*, 1930, **22**, 212, 215, 761; Browne, J. S. L., *Can. J. Res.*, 1933, **8**, 180.

4 Butenandt, A., and Browne, J. S. L., *Z. physiol. Chem.*, 1933, **216**, 49.

5 Zondek, B., *Nature*, 1934, **133**, 209.

1 Harde, E., *C. R. de l'acad. des Sc.*, 1934, **199**, 618; Harde, E., and Philippe, *C. R. de l'acad. des. Sc.*, 1934, **199**, 738; Harde, E., and Benjamin, H. R., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 651.