died at birth or were born dead. These were not seen. A third litter died within 24 hours after birth. Reproduction in these would seem to be an example of delayed sterility, for which we have no explanation. Evans and Burr[6] cite similar cases. In this group also there were no second gestations.

The results of the investigation quite definitely indicate that the effectiveness of wheat germ oil as an anti-sterility agent is due to the presence of some substance (Vitamin E) contained therein, and not to any retarding action which this may have on the oxidation of Vitamin A.

4210

Effect of Changes in Ion Concentration of Blood upon Reflex Time.

W. F. WENNER AND A. B. TAYLOR.

From the Zoological Laboratory, State University of Iowa.

Previous studies[1, 2] on the effect of changes in acid-base equilibrium on the physiological action of strychnine and curare indicated that an increase in hydrogen or hydroxyl ions might affect neural or neuro-muscular factors and thus alter the rate of conduction of the nerve impulse.

Dogs were used as experimental animals. The patellar tendon reflex time of normal unanesthetized dogs varied from .00775 to .0094 seconds with an average of .0082 seconds. The pH of the blood of the normal dogs at the time the records were obtained was about 7.36 and the CO_2 capacity 45 volumes %. With a drop in pH and CO_2 capacity the reflex time was decreased to about .0043 seconds. An increase in pH and CO_2 capacity also brought about a decrease in reflex time. The average reflex time following alkali administration was .0057 seconds. One dog included here showed an insignificant increase of .0006 seconds in reflex conduction rate at pH 7.53 and CO_2 capacity 72.97 volumes %.

The records obtained show clearly that the reflex time of dogs is markedly reduced, following acid, and to a less degree, following alkali administration.

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[6] Evans, H. M., and Burr, G. O., loc. cit.

[1] Wenner, W. F., and Blanchard, E. W., PROC. SOC. EXP. BIOL. AND MED., 1928, XXV, 726.

[2] Wenner, W. F., and Blanchard, E. W., *Ibid.*, 1928, xxvi, (preceding abstract).

It is suggested that an increase in H ions probably blocks out the higher centers ordinarily involved in the arc. On the other hand OH ions probably aid in facilitating the conduction of the nerve impulse.

4211

Aspects of Mineral Nutrient Balance as Related to Sap Hydrion Concentration.

W. F. LOEHWING.

From the Department of Botany, State University of Iowa.

Fluctuations in amounts of mineral nutrients found in plants is known to exert a profound effect on their metabolism. Results of recent experiments with grain plants grown on a number of acidic, humus soils deficient in potash disclose striking effects of certain mineral nutrients.

The accompanying chart (Fig. 1), typical of conditions in a number of grains, depicts schematically the chemical analyses of 3 oat crops *(Avena sativa)* grown on a soil variously treated with mineral

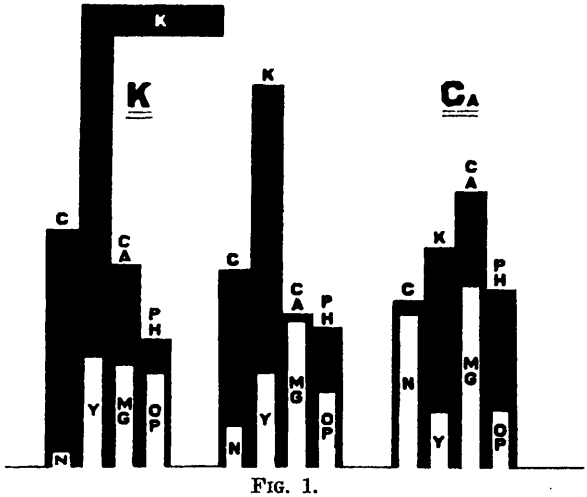

FIG. 1.

Analyses of entire oat plants grown in a potash deficient, acid humus following treatment with nutrients as follows: Left group (K), 400 p.p.m. of powdered KCl; center group, untreated (check) soil; right group (Ca), 4000 p.p.m. $CaCO_3$. c, total hydrolyzable carbohydrates; n, nitrate nitrogen; k, potassium; y, yield as dry weight; ca, calcium; mg, magnesium; all given as percentage of plant dry weight. ph, sap acidity in pH units; OP, osmotic pressure of expressed sap in atmospheres.