THE EFFECT OF CEANOTHYN UPON THE KIDNEY AND LIVER OF THE DOG.

BY THEODORE KOPPÁNYI.*

In view of the fact that the hemostatic substance, Ceanothyn, has been widely used clinically and no *acute* ill effects have been noted, it seemed desirable to investigate the effects of *prolonged* administration of the drug, especially with reference to its action upon the kidneys and liver. The Ceanothyn (*i. e.*, an extract containing the alkaloids of the plant, *Ceanothus americanus*), was given to us by Guy C. Taylor, and this preparation was used throughout the whole experiment.

Methods.—Three dogs were used, and the drug was administered to them by stomach tube. In no case did the ingestion of the drug cause any acute nausea or vomiting. The nature of the work undertaken necessitated repeated catheterization of the animals, and, therefore, female dogs were selected and episiotomy was performed in each of them. The effect of the drug upon the kidney was determined by Rowntree's phenol-sulphon-phthalein test, and by necropsy and histological examination, whereas its action upon the liver was determined solely by gross and microscopical examination of that organ.

Experimental.—The three episiotomized bitches were subjected to kidney function test.

Dog A excreted within the first two hours 65.2% of the intravenously injected dye (the phenol-sulphon-phthalein, mono-sodium salt solution—Hynson, Westcott & Dunning).

Dog B excreted 71.2% within two hours.

Dog C excreted 72.5% of the dye within the first two hours.

Excluding some preliminary experimentation, all three dogs were given the drug daily (excepting Sundays) from July 6th until July 25th. The daily dosage of the orally administered drug was 125 cc., excepting the last four days, when they received only 100 cc. of the fluid. The total dosage for each animal was approximately 1900 cc.

Results.—*Dog A* was subjected to the kidney function test on July 23rd, when she excreted during the first two hours 68.9% of the dye, and later, on July 25th, the excretion of the dye during the first two hours amounted to 70.5%. In all cases, the urine was tested for albumen and found to be negative. On July 26th the dog was killed for anatomical and histological examinations.

Dog B excreted, on July 23rd, 64.5% of the dye, and on July 25th, 68.5% during the first two hours. Albumen test negative.

Dog C excreted, on July 23rd, 66%, and on July 25th, 68.5% of the dye during the first two hours, and the urine contained no albumen.

Both dogs (*B* and *C*) are alive and well at the present writing (August 26th). Neither of them has lost any weight.

The intake of the drug by the dogs did not produce any pathological changes in the kidneys, as determined by the kidney function test. This result was corroborated by the gross and histological examination of the kidneys of *Dog A*.

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The examination (in which I was aided by Doctors Maximow and Cannon, of the University of Chicago) revealed that there were no intracellular infiltrations, no casts or blood in the tubules, and both the glomeruli and tubules appeared to be normal. The liver showed no trace of necrosis, and differed in no respect from that of a normal dog.

CONCLUSIONS.

Ceanothyn, administered orally to dogs in doses thirty to forty times the daily human dose, over a period of seventeen days, produced no detectable impairment of the kidneys and liver in the dog as shown by functional tests and morphological studies.

HYDROGEN-ION CONCENTRATION AND p_H.

(COLORIMETRIC DETERMINATIONS. PAPER II.)

BY A. LEE CALDWELL.

There are so many articles on making hydrogen-ion or p_H determinations that one hesitates to add to that number. However, each writer has his personal claims to merits of the methods that he advocates. Perhaps it should be said that there is, primarily, but one colorimetric method, and that this one method has many modifications, the entire success of which depends upon the reactions of certain indicators with acid and alkaline solutions. A great many forward steps have been taken in the development of indicators which show two distinct colors and all the variations between the two colors, dependent of course upon the hydrogen-ion concentration for the change of color. It will not be necessary here to go into detail regarding the theory of indicator properties. Even if it were attempted there could be nothing more than a general or "planket" decision made as to the why and wherefore of indicator action. Ostwald, who proposed the theory that molecular rearrangement was the cause of the color change, has not been disproven, although many other investigations have revealed additional causes.

The old and useful indicators of vegetable and animal origin, such as litmus and cochineal, are rapidly being replaced in the fields of acidimetry and alkalimetry, for many indicators react more easily to small amounts of acid or alkali and their uses are varied. Litmus is still useful but hardly has a place in control work of chemicals and pharmaceuticals. The most widely used indicators and the best for work in all fields are the sulphon-phthalein indicators, and they are the ones which will be discussed in this paper.

It might be well to emphasize the need of using indicators of reliable make and the necessity of checking the determinations with at least two indicators. Necessary to the determination of the p_H are standard buffer solutions with which the unknown solutions may be compared. Buffer solutions are solutions of acids or alkalies together with salts of these acids or alkalies, in most cases, sufficient to give a concentration producing the desired p_H and to withstand the effects of small amounts of acid or alkali with which they may come in contact. The most generally used and easily prepared buffers are those of Clark and Lubs (*J. Biol. Chem.*, 25 (1916), 479). They are prepared as follows: