When 100 mg of choline hydrochloride per day was administered orally, prompt reductions (of 15 and 20%) in the red cell counts occurred within 3 days, in spite of daily exposure of the animals to low atmospheric pressure. Reticulocyte percentages were also reduced, but the total leukocyte counts did not change significantly. Upon cessation of choline feeding, the erythrocyte numbers returned to their polycythemic values.

In 2 other dogs, the erythrocyte numbers were increased by 15% by daily oral administration of 8 mg of cobalt chloride per kg of body weight, over periods of 8 to 10 days (for details of method see reference to the author[3]). Upon feeding 8 mg of choline hydrochloride per kg of body weight per day, in 1% solution by stomach tube, in addition to cobalt, there was a prompt reduction of the erythrocyte numbers to 4 and 6% below normal in 3 days. The reductions in erythrocyte numbers, reticulocyte and hemoglobin percentages persisted for 6 days during which choline was fed. After discontinuation of the choline, these values gradually increased, over a period of 5 days, to their polycythemic values. The total leukocyte counts did not change significantly throughout these experiments.

The same dose of choline (8 mg per kg) was administered to 2 normal dogs over a period of 6 days, and did *not* change their normal erythrocyte numbers significantly.

These experiments indicate that the oral administration of choline hydrochloride depresses hematopoiesis in polycythemic dogs, and tends to return the red cell number to normal.

10449

Effect of Certain Posterior Hypophyseal Extracts on Ciliary Motion.

AUSTIN E. SMITH. (Introduced by E. M. Boyd.)

From the Department of Pharmacology, Queen's University, Canada.

This report deals with an attempt to ascertain the effect of certain pituitary extracts on the rate of ciliary movement of the esophageal and pharyngeal mucosa of healthy frogs *(Rana pipiens)*, weighing 25 g each. The brain and spinal cord were carefully pithed, the lower jaw removed, and the esophagus and stomach exposed by cutting through the pectoral girdle. The pharynx and esophagus

[3] Davis, J. E., PROC. SOC. EXP. BIOL. AND MED., 1937, **37**, 96.

were then incised ventrally. The frog was then pinned in a supine position without stretching the area to be observed. Mucus was removed gently by stroking with absorbent cotton saturated with frog saline.

The stimulation of ciliary movement was evaluated by determining the interval during which a mustard seed was transported a constant distance. Fourteen to 20 control determinations preceded the testing of any of the substances. All experiments were conducted at the same room temperature. All the solutions and the frog saline were added at the same rate and the same volume through a pipette. Recovery time was noted in every experiment; the cilia were not rendered permanently non-motile in any experiment.

Pituitrin* was the first solution added. Its effect on passage time was recorded at 1, 2 and 3 minute intervals. Pitocin and pitressin were then applied and any comparable results compiled. Forty-five frogs were used in approximately 360 experiments, each result being the average rate of passage of many mustard seeds. Various dilutions of acetic acid were also applied to eliminate the acidity of the pituitrin as a ciliary stimulant.

TABLE I.
% Increase of Ciliary Motion After Topical Application of Pituitrin.

% concentration	% increase of ciliary motion after			% experiments showing stimulation
	1 min.	2 min.	3 min.	
2.0	23.3	30.7	32.0	100.0
1.0	20.0	26.1	22.6	88.8
0.2	15.2	24.6	18.9	63.6
0.1	16.5	5.3	2.4	70.0

Table I illustrates the increased motility and its prolongation induced by the topical application of certain concentrations of pituitrin extracts applied to pharyngeal and esophageal mucosa of the frog.

TABLE II.
% Increase of Ciliary Motion After Topical Application of Pituitrin, Pitocin, Pitressin and Acetic Acid.

Substance	%	% increase of ciliary motion after application
Pituitrin	2.0	12.2
Pitocin	2.0	17.6
Pitressin	2.0	14.2
Acetic acid	0.02	—20.2 (decrease)
" "	0.5	cilia motionless

*The Pituitrin (Surgical) was generously donated to the Department of Pharmacology by Dr. E. A. Sharp of Parke, Davis and Co.

Table II indicates that pitocin stimulated ciliary activity more than the other substances tested and that acetic acid depressed and finally arrested ciliary activity. Thus the stimulating effect of pituitrin is apparently due to some property of the extracted glandular material other than its acidity.

10450 P

Urinary Concretions Caused by Sulfapyridine.

PAUL GROSS, FRANK B. COOPER AND MARION LEWIS.

From the Western Pennsylvania Hospital Institute of Pathology, Pittsburgh, Pa.

Sulfapyridine is being widely used in clinical experiments because of its alleged lack of toxicity and the promising results reported by Whitby,[1] and by Evans and Gaisford.[2] However, our investigations,[3, 4] as well as those of others,[5, 6] have failed to confirm Whitby's claims that the drug is capable of protecting mice against 10,000 fatal doses of pneumococci; and we have pointed out that the order of efficacy of this drug and of sulfanilamide is approximately the same in rats. Marshall, Bratton and Litchfield[7] have recently issued a warning in regard to the erratic absorption and the potential toxicity of the drug, stating that sulfapyridine should not be used where sulfanilamide is indicated. Long and Finestone[6] have also drawn attention to the fact that the absorption and excretion of sulfapyridine are erratic.

In the course of an investigation concerning the delayed deaths of rats treated with sulfapyridine, we noted that although the infections were in some instances apparently cured, the kidneys were enlarged and soft, the pelves and ureters dilated, and the bladders empty and contracted. Careful examination of the urinary tract revealed crystalline, spiculated, white or yellow concretions and sand, often im-

1 Whitby, L. E. H., *Lancet*, 1938, **1**, 1210.

2 Evans, G. M., and Gaisford, W. F., *Lancet*, 1938, **2**, 14.

3 Cooper, F. B., Gross, P., and Lewis, M. L., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 37.

4 Cooper, F. B., Gross, P., and Lewis, M., to be published.

5 Hilles, C., and Schmidt, L. H., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 73.

6 Long, P. H., Bliss, E. A., and Finestone, W. H., *Pennsylvania M. J.*, 1939, **42**, 483.

7 Marshall, E. K., Jr., Bratton, A. C., and Litchfield, J. T., Jr., *Science*, 1939, **88**, 597.