

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.

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Sulfapyridine is being widely used in clinical experiments because of its alleged lack of toxicity and the promising results reported by Whitby,<sup>1</sup> and by Evans and Gaisford.<sup>2</sup> However, our investigations,<sup>3, 4</sup> as well as those of others,<sup>5, 6</sup> 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<sup>7</sup> 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<sup>6</sup> 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-

<sup>1</sup> Whitby, L. E. H., *Lancet*, 1938, **1**, 1210.

<sup>2</sup> Evans, G. M., and Gaisford, W. F., *Lancet*, 1938, **2**, 14.

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

<sup>4</sup> Cooper, F. B., Gross, P., and Lewis, M., to be published.

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

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

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

pacted, with more or less complete urinary obstruction. A chemical analysis of these concretions indicated 6.4% sulfapyridine and 64.1% acetylsulfapyridine. These findings were absent in untreated rats, and in rats treated with sulfanilamide; all of which had been on the same diet. The dosage employed was the same for both drugs: one-half to one gram per kilo per day for 8 to 14 days.

Higgins<sup>8</sup> has produced urinary calculi in rats with vitamin A deficient diet. The calculi described by Higgins were spherical and light brown, consisted chiefly of calcium phosphate, and were associated with alkaline urine. The diet of our rats consisted of fresh carrots, dog biscuits (said to contain vitamins A and D), oats, and white bread. The urine of normal rats fed on this diet has a pH 5.5 to 6.5. The urine of the rats with calculi had a similar range.

The possibility must not be overlooked that similar concretions with necessarily delayed symptomatology may develop in man as a result of sulfapyridine administration.

#### 10451 P

### Experimental Vascular Disease in Rats Produced by Multiple Depletions of Vitamin A.\*

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The pathology of chronic vitamin deficiency is usually studied in laboratory animals which have been subjected to a partial deficiency over a long period of time. This dietary method has been considered to represent the closest analogy to the course of the human disease.<sup>1</sup> The present experiment was designed to effect pathologic changes in the rat by successive and complete depletions of vitamin A rather than by sustained and partial withdrawal of the vitamin. To obtain this end, multiple avitaminotic episodes of varied severity were interspersed with periods of relative recovery.

*Procedure.* Twenty-four pairs of rats, litter-mates of the same

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<sup>8</sup> Higgins, C. C., *J. A. M. A.*, 1935, **104**, 1296.

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<sup>1</sup> Editorial, *J. A. M. A.*, 1938, **111**, 2019.