the warm solution. The cytidine sulfate obtained from the flavianate was extremely pure, and one recrystallization proved sufficient to obtain the base in beautiful crystals.

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Studies on the Physiology of Pyrimidines. The Intermediary Metabolism of Uracil.

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In an earlier paper[1] experiments were reported which showed that uracil and thymine, when fed in small amounts to dogs, are metabolized to urea. It was also shown that thymine glycol which is obtained on oxidation of thymine *in vitro*[2] is probably an intermediate step in the oxidation of this pyrimidine in the animal body. These results led the writer to investigate the fate of isobarbituric and isodialuric acids which are oxidation products of uracil *in vitro*[3] as possible intermediate metabolic products of uracil.

Steudel[4] reported feeding experiments with these two substances. He found that they were apparently completely oxidized.

Isobarbituric acid and isodialuric acid were fed to dogs maintained on a nitrogen equilibrium. In every case when isodialuric acid was administered, there was an increase in the urea output, suggesting that this substance was metabolized. In the case of isobarbituric acid, the increase in the urea output after feeding the substance was not as pronounced as after administering isodialuric acid. This may have been due to a lesser absorption of isobarbituric acid on account of its being less soluble.

These experiments seem to indicate that in the metabolism of uracil we are dealing with an oxidation resembling that *in vitro* as follows: Uracil → Isobarbituric acid → Isodialuric acid → urea + 3 C-atom compound.

In the course of these experiments we have observed a peculiar effect of these substances on the sulfur metabolism of the dogs. We

[1] Cerecedo, L. R., *J. Biol. Chem.*, 1927, lxxv, 661.

[2] Baudisch, O., and Davidson, D., *J. Biol. Chem.*, 1925, lxiv, 233.

[3] Behrend, R., and Roosen, O., *Ann. Chem.*, 1889, ccli, 235.

[4] Steudel, H., *Z. Physiol. Chem.*, 1901, xxxii, 285.

found a distinct decrease in the output of inorganic sulfur on the day after feeding these pyrimidines. In some cases this decrease amounted to one-half of the amount ordinarily excreted. The writer is investigating this point further.

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Effect of Protein Heat-Denaturization on the Precipitin Graph.

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If 1 cc. horse serum is added to 19 cc. normal dog serum and the mixture is heated to 60° C. for several days, parallel titrations of the resulting products by means of ice-chest ripened anti-horse rabbit precipitin show a gradual flattening of the precipitin graph,[1] without appreciable change in the end reaction to "titer". The flattening of the graph is, therefore, taken as an index of specific protein denaturization. The stability of the end point suggests the relative reliability of the end reaction as a quantitative test.

The above tests are preliminary to an attempted interpretation of the altered precipitin graphs obtained with parenterally injected alien proteins.

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Parenteral Retention of Undenatured Foreign Proteins.

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Ice-chest ripened anti-horse rabbit precipitin contains: (a) a high-titer, highly active specific precipitin for horse proteins, and (b) a low-titer, relatively inert "non-specific precipitin" for canine proteins. Acting together these two precipitins presumably function as (c) a precipitin for hypothetical proteins of intermediary, "hybrid," or horse-canine specificity.

[1] For technic and typical graphs see PROC. SOC. EXP. BIOL. AND MED., 1929, xxvii, 14.