



Experimental

4,6-Diamino-5-formamidopyrimidine Sulfate² (II).—4,5,6-Triaminopyrimidine sulfate (III) (500 mg., 0.0022 mole) was warmed with 2 cc. of 25% aqueous formic acid, prepared by the hydrolysis of hydrogen cyanide.⁵ (22.2 atom per cent. excess C¹³) until all the solid had gone into solution. Upon cooling, 360 mg. (78%) of 4,6-diamino-5-formamidopyrimidine sulfate ((C₅H₇ON₅)₂·H₂SO₄·H₂O) separated. Isotope analysis showed 4.37 atom per cent. excess C¹³ (calcd. 4.44). The product was characterized by a comparison of its ultraviolet absorption spectrum with that of an authentic sample: $\epsilon_{\max} = 4600$, $\lambda = 259$ m μ ; authentic sample $\epsilon_{\max} = 4690$, $\lambda = 259$ m μ .

Adenine Sulfate² (I).—(a) Compound II (345 mg.) was heated with 3 cc. of freshly distilled formamide for two and one-half hours at 165° in a sealed tube. On cooling the adenine which separated was recrystallized from 2 N sulfuric acid and contained 1.06 atom per cent. excess C¹³, or about one-quarter of the expected value; yield, 280 mg., 70%.

Anal. Calcd. for C₅H₅N₅·H₂SO₄· $\frac{1}{2}$ H₂O: N, 28.9, S, 13.2. Found: N, 28.7; S, 13.7.⁶

(b) Under the same conditions, 4,5,6-triaminopyrimidine sulfate resulted in a 62% yield of adenine sulfate.

(5) Krieble and McNally, *THIS JOURNAL*, **51**, 3368 (1929).

(6) Adenine is obtained as (C₅H₅N₅)₂·H₂SO₄·H₂O if crystallization is rapid.

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The Solution of Gold by Selenic Acid

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The solvent action of concentrated selenic acid at temperatures of 250° and over is known.¹ It has seemed to us worth while to ascertain the rapidity of this reaction at lower temperatures and in less concentrated solutions.

In the first experiments 50-mg. portions of flattened fine gold wire, 0.49 mm. in diameter, were sealed in three thick-walled Pyrex glass tubes with 0.5 ml. of 67, 87 and 98% selenic acid, respectively, and heated in the vapor of boiling chlorobenzene (130°). In the second experiments similar tubes were charged with 20 mg. of the gold in the same amount of the same acids and were heated in the vapor of boiling bromobenzene (154°).

In the most dilute acid at 130° no action was evident for thirteen days, and at 154° none for twenty-six days.

(1) Lenher, *THIS JOURNAL*, **24**, 354 (1902).

In the 87% acid at 130° some action was evident after eight hours and solution was complete after twenty-six days; at 154° solution was complete after thirteen days.

In the 98% acid at 130° dissolution began after ten minutes and was complete in three days; at 154° it was complete in thirteen hours.

Solutions of the gold in the concentrated acid when diluted with water yielded small golden-yellow crystals of gold selenate. These crystals were found to be insoluble in common organic solvents but in every case the crystals showed blackening, indicating oxidation of the organic material and reduction of the selenate.

Since both gold and selenium are used to color glass a pink or red, it was of interest to try use of powdered gold selenate for this purpose. A small quantity of glass was prepared by fusing two grams of sodium carbonate, one gram of calcium carbonate, four grams of silica, with a milligram of gold selenate. A lovely pink-violet glass resulted.

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Molecular Properties of Water-soluble Polysaccharides from Western Larch

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Previous studies of the molecular properties of the water-soluble polysaccharides from larch (exact species, age and part of tree, sapwood and heartwood, not given) by Mosimann and Svedberg³ using the sedimentation velocity ultracentrifuge technique indicate that the material consists of two components with molecular weights of 100,000 and 16,000.

Present studies were made on the extract from both the sapwood and the heartwood of a 30-year old butt log of Western larch. The water-soluble extract of the heartwood obtained at 30° was 8.4% of the wood and that of the sapwood was 0.9%. The pentosan content of the extracts was 13.7 and 11.9%, respectively.

The pentosan content of the single heartwood component, 13.7%, is within the range of the pentosan contents given by Peterson and collaborators⁴ for three different types of larch, 13.1 to 14.3%. The pentosan content of the combined α - and β -constituents of the sapwood, 11.9%, is almost identical to the value given by Wise and Peterson,⁵ 11.95%. Neither of these groups of investigators indicated what part of the wood was used. It is hence possible that Peterson and collaborators may have used heartwood and Wise and Peterson sapwood.

Sedimentation velocity runs showed the heart-

(1) Foreign collaborator, Oslo, Norway. The author wishes to thank Drs. Alfred J. Stamm and Geo. J. Ritter of the Forest Products Laboratory² for making available the facilities of their laboratory and for suggestions in the chemical phase of the work and Prof. J. W. Williams of the Chemistry Department of the University of Wisconsin for making available the University's ultracentrifuge, which was used in this research.

(2) Maintained at Madison, Wis., in coöperation with the University of Wisconsin.

(3) Mosimann and Svedberg, *Kolloid Z.*, **100**, 1 (1942).

(4) Peterson, Barry, Unkauf and Wise, *THIS JOURNAL*, **62**, 2361 (1940).

(5) Wise and Peterson, *Ind. Eng. Chem.*, **22**, 362 (1930).