and as far as demonstrating the absence of morphine or any interfering bases was concerned, was conclusive. With the extractive to which morphine *had* been added, a final "mahogany color" had been obtained, but no change with the pure extract from the parts of the body.

Iodic acid gave indications of a reducing agency, since iodine could be detected with clear, fresh starch-paste in all instances.

The nitric acid tests were found to be of no value, ferric chloride, with freshly prepared solution of potassium ferricyanide, gave indications of a base having similar reducing action as morphine. Parallel tests were made, the one containing the extractive from two cc. of final amyl alcohol solution, was evaporated to dryness, taken up with four cc. of fiftieth normal sulphuric acid; the other treated in an exactly similar way, *but* to which had been added 0.00001 gram of morphine. To both these solutions were added eight cc. of a solution of potassium ferricyanide and one drop of solution of ferric chloride. With the portion known to contain morphine, a blue color appeared *at once*; with the simple extractive matter from the viscera, only a light green color appeared, not changing at all in three minutes; slightly darker in five minutes; after ten minutes one could easily distinguish the samples one from the other, but after two hours both had deposited a similar blue precipitate.

During the process of extraction of the different organs, it was noticed that from them, and particularly from the liver, brain, spleen, intestines, and kidney, a decided odor resembling that of trimethylamine was given off, continuing all the way through.

CHEMICAL LABORATORY, UNIVERSITY OF MICHIGAN,
June 2, 1894.

FERMENTATION OF GLUCOSE SYRUPS.

BY HORACE E. HORTON.

Received October 23, 1894.

I WOULD like to call attention to the interesting fact that glucose syrup of 41° Bé. is fermentable. The opinion is general that glucose of this gravity is non-fermentable and I am unable to find any published record of such fermentation.

During the summer of 1893 large quantities of the so-called "mixing glucose" sold in southern cities was found to be in a

state of active fermentation. It was thought that the samples were of light gravity, but moisture determinations showed 21.1 per cent., the normal quantity for 41° Bé. syrup. This fermentation was found to exist not alone in the 41° syrup but in samples of 42° Bé. containing 20.19 per cent. moisture.

Cultures of the various liquors in the refinery showed that the ferment was introduced into the goods at some point after the 39° Bé. vacuum pan.

To prevent the finished goods from fermenting the following experiments were made with well-known antiseptic materials.

1.46 pounds of 40° Bé. sodium bisulphite added to each barrel of fifty-two gallons. No effect.

One-half ounce boracic acid and one-quarter ounce benzoic acid to each barrel of fifty-two gallons. No effect.

1.46 pounds of 40° Bé. sodium bisulphite, one-half ounce boracic acid, and one-quarter ounce benzoic acid to each barrel of fifty-two gallons. No effect.

TOPEKA, KANSAS, October, 1894.

ON THE TECHNICAL ANALYSIS OF ASPHALTUM.

BY LAURA A. LINTON.

Received September 21, 1894.

IN the year 1837, J. B. Boussingault published his celebrated memoir on the "Composition of Bitumens." In the researches upon which this memoir was based he had discovered that certain bitumens yielded to one class of solvents a portion of their content and to another class of solvents another portion of their constituent hydrocarbons. He called the first portion "Petrolene" and the second portion, "Asphaltene."[1]

In 1827[2] Le Bel and Muntz went over the same ground and in 1883 Le Bel again went over it, adding a few facts in relation to other bitumens than those previously examined but leaving the two substances, petrolene and asphaltene, practically where he found them.[3]

In 1837 the conclusions based on chemical research were far less exact than at the present time and Boussingault concluded that the substances, petrolene and asphaltene, were simple sub-

[1] *Annales de Chemie et de Physique*, 64, 141.

[2] *Bull. Soc. Chim.*, 17, 156. [3] Ibid, 50, 359.