

Similarly the xylene lost not only one of its two methyl groups, forming paratoluic acid, but also both of the members of the side chain with the production of phthalic acid. In the case of cymene, however, the propyl group appeared to break down so much more readily than the methyl group, that the latter was protected from the oxidizing action, and the only hydroxylated derivative was paratoluic acid. But the most striking exemplification of this tendency to form hydroxyl derivatives was exhibited by naphthalene. Not only was the carboxyl group produced, with the generation of phthalic and oxalic acids (both of which changes might be looked upon as evidence of a similarity of action between hyponitric anhydride and nitric acid), but the new hydroxylated compound, tetroxynaphthalene, $C_{10}H_4(OH)_4$, was formed. In this body no less than four of the hydrogen atoms in naphthalene are replaced by hydroxyl. At the same time, the diquinone, $C_{10}H_4O_4$, was formed, in which four atoms of hydrogen are replaced by oxygen.

It is not improbable that both dioxynaphthalene, $C_{10}H_8(OH)_2$, and naphthoquinone, $C_{10}H_6O_2$, were first formed and afterwards converted into these higher derivatives. But of these, and of naphthol and of dioxynaphthoquinone, $C_{10}H_4O_3(OH)_2$, no evidence could be found in the final products.

XLVI.—DETECTION OF STARCH SUGAR MECHANICALLY MIXED WITH COMMERCIAL CANE SUGAR.

By P. CASAMAJOR.

[Second Paper.]

In a previous communication on the same subject,* read before the American Chemical Society at the meeting of March, 1880, I gave several processes for the detection of starch sugar in commercial sugars. One of these consisted in adding to the suspected sugar a quantity of cold water, somewhat less than its own weight, and stirring the mixture for a few seconds. If starch sugar is present, it will be seen in the shape of white chalky specks.

Quite lately a sample of yellow refined sugar was given to me which was supposed to be adulterated by being mixed with starch glucose. By applying the test just mentioned, there seems to be left a few small chalky specks, which dissolved after standing a minute or two, making it very uncertain whether any starch glucose was present. Upon repeatedly trying the same test, the result was always doubtful.

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I was then led to treat the suspected sugar by a liquid capable of dissolving sugar, but without any solvent action on starch glucose. After many trials, I found that methylic alcohol of such density as to mark 50° by Gay Lussac's alcoholmeter, answered the purpose very well, if previously saturated with starch sugar, as this solution dissolves cane sugar, either white or yellow, very readily, but does not dissolve starch glucose.

Methylic alcohol at 50°, saturated with starch sugar, gives a solution of specific gravity = 1.25. 100 c.c. of methylic alcohol at 50° dissolves 57 grms of dry starch sugar, the volume of the solution being 133 c.c. A solution of starch sugar in ethylic alcohol does not answer so well, because ethylic alcohol does not dissolve so readily the gummy matters found in soft sugars, which are those generally chosen for adulteration with glucose.

To test the presence of starch sugar in a commercial cane sugar, the suspected sugar should, in the first place, be thoroughly dried, as otherwise any water present will weaken the alcohol, and enable it to dissolve more starch sugar. It should then be stirred for about two minutes with the saturated solution of starch sugar in methylic alcohol. After this, the residue is allowed to settle, and the clear solution poured off. The residue may then be washed with a fresh quantity of the same solution. After stirring again and allowing the residue to settle, there will remain, if any starch sugar is present, a certain quantity of chalky white specks, accompanied by a fine deposit, formed by the starch sugar present, in powder or fine grains. These finer particles are never seen when water is used for detecting the presence of starch sugar, as they dissolve in water very readily. It seems probable that by using this solution of starch sugar in weak methylic alcohol, the starch sugar in an adulterated sample could be estimated quantitatively by a process somewhat analogous to that of Payen for estimating cane sugar.

Not having had any occasion for such a process, I have not determined experimentally the degree of approximation obtainable in this way.

The methylic solution of starch sugar should be poured on a filter, after it has dissolved all it can from a commercial sugar, and the residue should be washed out with the same solution, and every thing poured on a weighed filter. After all the liquid has run off, the filter and the residue may be rapidly washed with the strongest methylic alcohol found in commerce, which tests 92½° by Gay Lus-

sac's alcohometer, and which dissolves starch sugar with great difficulty.

By a dexterous use of this process, it seems probable that very approximate results may be obtained, although what is said here is merely in the nature of a suggestion to those who may have use for quantitative results.

Abstracts from American and Foreign Journals.

Bulletin de la Société Chimique de Paris.

Abstractor, E. H. S. BAILEY, Ph. B.

On the Sulphocyanate of Platinum of M. Marcano, G. WYRONBOFF (33, 402).—The body described by M. Marcano (*Bull. Soc. Chim. de Paris*, 33, 250) is not a sulphocyanate of platinum, $(\text{CyS})_6\text{Pt}$, but rather a sulphoplatinate of potassium, $(\text{CyS})_6\text{PtK}_2$, a body previously described.

A Combination of Tetrachloride of Titanium and Chloride of Acetyl, A. BERTRAND (33, 403).—By mixing tetrachloride of titanium with chloride of acetyl, yellow octahedral crystals are obtained, having the symbol $\text{C}_2\text{H}_3\text{OCl} + \text{TiCl}_4$.

Some Properties of Mixtures of Cyanide of Methyl with Ordinary Alcohol and with Methyl Alcohol, C. VINCENT and B. DELACHANAL (33, 405).—This subject is discussed under the topics:

1. Boiling point of mixtures of alcohol and cyanide of methyl.
2. Density of the preceding mixtures.
3. A method for the separation of cyanide of methyl from ordinary alcohol.
4. Boiling point and density of mixtures of methyl alcohol and cyanide of methyl.

On the Determination of Urea by Hypobromite of Sodium, C. MÉHU (33, 410).—Will be noticed elsewhere.

Oxalic Acid, A. VILLIERS (33, 415).—Fine crystals of normal oxalic acid, $\text{C}_2\text{H}_2\text{O}_4$, can be obtained by dissolving, with the aid of heat, small quantities of ordinary oxalic acid in concentrated sulphuric acid. After some time crystals are deposited which are in the form of right octahedrons with rhombic base, and are very transparent. Ordinary hydrated oxalic acid crystallizes in clinorhombic prisms. A number of other characteristics of the normal acid are also noticed.