Assuming that of the latter group of easily hydrolyzable constituents the furfural-yielding bodies are exclusively pentosans, this would amount to one-half, and the entire straw (structural elements) might be expressed in terms of its proximate constituents, as follows :

Disposition in stem.			Containing cellulose.	Yielding furfural.
Hypodermal fibers and fibers of fibrovascular bundles.	Lignocelluloses	33.0	25.0	2.6
Vessels of fibrovascular bundles parenchyma and corbex.	Resistant cellulose.	25.0	2.50	2.6
	Hemicelluloses	21.0	...	..
	Pentosans	21.0	...	9.0
		100.00		14.6

It will be an object of our future investigations further to differentiate this complex.

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NOTES UPON THE DETERMINATION OF NITRITES IN POTABLE WATER.

BY AUGUSTUS H. GILL AND H. A. RICHARDSON.

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IN comparing the results obtained by Trommsdorff's iodo-zinc starch method and Griess' α-napthylamine test upon a large variety of waters, discrepancies were noticed which were very marked in the case of the peaty waters. These showed no blue by Trommsdorff's method, but in some cases as high as 0.0010 parts nitrogen as N_2O_3 per 100,000 by the Griess test. Upon decolorizing the waters the results agreed, showing that the peaty matter interferes with the formation of the iodide of starch, and unless nitrites are present in considerable quantity (above 0.0020 parts nitrogen as N_2O_3 per 100,000) this test is not capable of detecting them.

The decolorization was affected in the cold, as heating increases the nitrites, by shaking up about 250 cc. of the water with three cc. of "milk of alumina,"[1] allowing to settle, and filtering through a filter which is washed free from nitrites. Even when using Griess' method it was found advantageous to decolorize the peaty waters, as their brown color modifies the pink tint, giving a slightly higher reading than would otherwise be obtained.

[1] Prepared by precipitating a boiling solution of 125 grams potash alum per liter with ammonia, allowing the aluminum hydroxide to settle and washing by decantation.

COMPARISON OF METHODS FOR QUANTITATIVE ESTIMATION OF NITRITES.

		Parts Nitrogen as N_2O_3 in 100,000.					
		0.0000	0.0001	0.0005	0.0010	0.0015	0.0020
Decolorized tap water.	Naphtylamine	Mere trace of color.	The gradation was excellent and the color fully developed in twenty minutes, the highest standard developed immediately.				
	Iodo-zinc starch	Not a trace of blue.	The color did not fully develop until the expiration of five hours, although there was a faint color in the higher standards in an hour.				
	m-Phenyl diamine	Not a trace of color in any of the standards.					
Tap water (Cochituate).	Naphtylamine	Some color, *i. e.*, in nitrites in Cochituate.	Excellent gradation, color developed in twenty minutes, but the color was modified by the coloring matter in the water, thus being difficult to read.				
	Iodo-zinc starch	Did not develop.	Did not develop.	Did not develop.	Developed in eighteen hours.	Developed in eighteen hours.	Developed in eighteen hours.
	m-Phenyl diamine	No increase in color over that originally in Cochituate water.					
Water free from ammonia.	Naphtylamine	The gradation was excellent and the color fully developed in twenty minutes. The reading of the Cochituate to which no nitrites had been added was 0.0004.					
	Iodo-zinc starch	The color did not fully develop until the expiration of five hours, but at the end of that time there was color in all the tubes, even the very lowest.					
	m-Phenyl diamine	Not a trace of color in any of these standards.					

The table on the preceding page shows the effect of the peaty matter and also a comparison of the methods, together with that of the *m*-phenylene diamine.

In some cases a pink color was obtained and no blue, due probably to the greater delicacy of the napthylamine test, it being competent to detect 0.0001 part of nitrogen as N_2O_3 in 100,000. This we think is the extreme limit of the test, as different *shades*, not *depths* of color are obtained upon adding different quantities of the reagents, as Dr. J. T. Tanner[1] found. The iodo-zinc starch method is incapable of detecting less than 0.0002 part of nitrogen as N_2O_3 per 100,000.

In a few cases a blue color appeared, but no pink, but upon passing carbon dioxide through the water no blue was obtained. This may possibly have been due to hydrogen peroxide. Where large quantities of nitrites are present, a purple color instead of a blue is obtained, which is difficult to estimate; in such cases the water should be diluted before applying the test.

In conducting the Griess test, the directions given by Dr. Tanner[2] were followed with the additional precaution of using water free from nitrites in the preparation of the reagents. This was prepared by distilling the middle portion of ordinary distilled water with an excess of alkaline permanganate, collecting the middle portion of the distillate thus obtained. Water prepared in this way gives no test upon eighteen hours' standing, even when tightly stoppered.

A GRAVIMETRIC METHOD OF ESTIMATING PHOSPHORIC ACID AS AMMONIUM PHOSPHOMOLYBDATE.[3]

BY THOMAS S. GLADDING.

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THE estimation of phosphoric acid by weighing the yellow precipitate of ammonium phosphomolybdate has often been attempted, but, except in iron analysis, where the amount of phosphorus is very small, such a method has never yet been successful. The reason of such failure is evident when we consider the analyses that have been made of the yellow precipitate. A few only need be presented.

1 Report National Board of Health, *1882*, 280.

2 *Loc. cit.*

3 Read before the New York Section of the American Chemical Society, Nov. 8, 1895.