

salts, due to partial hydrolysis. We have discovered that beryllium salts may be dehydrated by heating in fused ammonium salts. Beryllium salts so dehydrated may be electrolyzed in liquid ammonia solution without removing the excess ammonium salts and yield metallic beryllium.

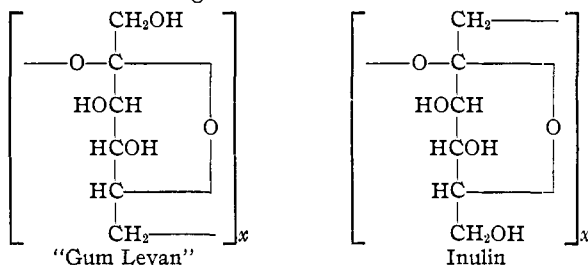
THE MORLEY CHEMICAL LABORATORY  
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### THE STRUCTURE OF "GUM LEVAN"

Sir:

"Gum Levan," formed by the action of *Bacillus mesentericus* on cane sugar, has been definitely identified by hydrolysis, acetylation and methylation experiments conducted in this Laboratory as a polymerized anhydrofructofuranose, the linkages being at positions 2 and 6 of the fructose sugar chain, as compared with the 1,2-linkage in the case of inulin. It can be prepared in a pure state, free from nitrogen and ash, by the action of the enzyme isolated from the organism.



When submitted to the action of *Bacillus xylinum* it yields a new product, apparently more highly polymerized, which is at present under investigation.

Methylation of "levan" yields a trimethyl derivative which on hydrolysis gives a new crystalline 1,3,4-trimethylfructofuranose, m. p. 63°, the first crystalline  $\gamma$ -sugar to be isolated. Its constitution is confirmed by its inability to form an osazone, transformation to tetramethyl- $\gamma$ -fructose, and oxidation by nitric acid to yield a dibasic dimethyl lactol acid. The diethyl ester of the latter on methylation and treatment with dry ammonia gives a crystalline diamide, m. p. 138°.

The bearing of these facts on the nature of plant synthesis is to be discussed in a forthcoming article.

Further researches in connection with the action of *Leuconostoc mesenteroides* and other bacteria (as well as their corresponding enzymes) on carbohydrates are in progress.

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