

THE STRUCTURES OF THE ACETYLMETHYLMANNOSES¹

Sir:

Three new crystalline hepta-acetyl-4-glucosido-methyl-mannosides have been prepared by the Koenigs and Knorr reaction: (α) m. p. 185°, $[\alpha]_D^{20} + 26.7^\circ$ in chloroform; (β) m. p. 161°, $[\alpha]_D^{20} - 22.3^\circ$ in chloroform; (γ) m. p. 167°, $[\alpha]_D^{20} - 12.7^\circ$ in chloroform. These new compounds appear to be analogous to the three previously known acetylmethylmannosides whose structures have been the subject of considerable controversy [Hudson, THIS JOURNAL, 52, 1680 (1930)]. Since the new compounds cannot contain a 1,4-ring, that ring structure is eliminated for compounds of the corresponding types. The new derivative designated " γ " exhibits the reactions characteristic of the acetylmethylglycosides which have recently been assigned an ortho carbonic ester structure by Bott, Haworth and Hirst [*J. Chem. Soc.*, 1395 (1930)] and also independently by K. Freudenberg [*Naturwissenschaften*, 18, 393 (1930)].

The writer has found that the methoxyl group in one of his new compounds (γ) may be replaced by a hydroxyl group, giving a hepta-acetyl-4-glucosido-mannose, which does not exhibit mutarotation, $[\alpha]_D^{20} + 21.7^\circ$ in chloroform. If the methoxyl group in the parent glycoside were combined directly with the first carbon atom upon removing the methoxyl group, the first carbon would be left free and the new substance would exhibit mutarotation. The absence of mutarotation for the new substance indicates that the methoxyl group in the parent hepta-acetyl-4-glucosido- γ -methylmannoside was not combined directly with the first or aldehydic carbon. Thus the newly found reactions support the Haworth-Freudenberg ortho carbonic ester structure rather than the 1,3-ring structure for compounds of this type.

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THE ACTIVATION ENERGY OF ADSORPTION PROCESSES

Sir:

A rapid development in experimental researches, during the last decade, on adsorption phenomena at solid surfaces having catalytic activity has served to emphasize the existence of adsorption processes in which a high degree of specificity is manifest. This has centered attention on the function of valence forces in determining adsorption. The experimental work has produced a number of results which, from the standpoint of classical adsorption theory, are abnormal. These include abnormal

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