NOTE

Mannitol from Haplophyton Cimicidum.—During the course of an investigation of the reported insecticidal properties of the plant *Haplophyton Cimicidum*, mannitol was isolated and identified. The crude crystalline material, separating from the concentrated alcoholic extract of this plant, from which pure mannitol was obtained, represented approximately 0.75% of the weight of the plant on a dry basis. The substance was identified by means of its tribenzacetol and hexacetyl derivatives.

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COMMUNICATIONS TO THE EDITOR

AN X-RAY EXAMINATION OF THE HIGHER NORMAL PRIMARY ALCOHOLS

Sir:

X-ray examination of the higher normal primary alcohols reveals an interesting distinction between the odd and the even carbon chain series. As is usual with such long-chain compounds, the large crystal spacing increases linearly with increasing carbon content, and in the case of the

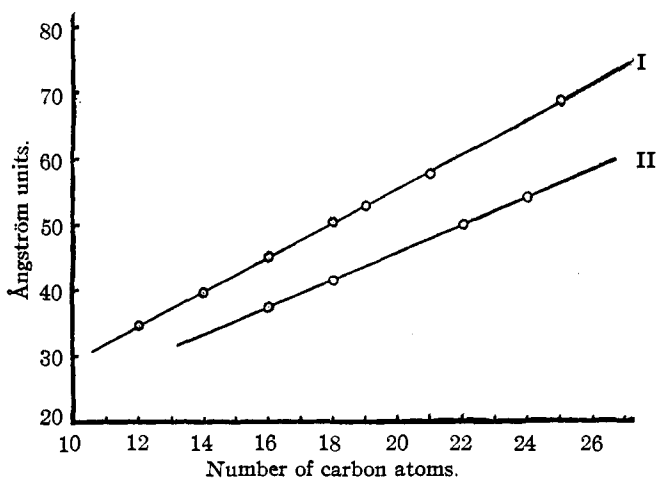

Fig. 1.

higher alcohols, when crystallized from ethyl alcohol, the long crystal spacings for the odd alcohols lie on the upper Curve, I (Fig. 1), while those for the even alcohols (above C_{16}) lie on the lower Curve, II. The point of interest is, however, that below C_{16} the spacings of the even alcohols lie

on the upper (odd) line, C_{16} alcohol itself gives two spacings, one on each line, while C_{18}, if fused, then gives a spacing on the upper line. The spacings of the odd alcohols, crystallized from solvents or fused, lie on the same upper line.

If the diameter of the carbon atom is taken as 1.54 Å., the spacings on Curve I correspond closely to a vertical chain of carbon atoms inclined tetrahedrally to each other, and those in Curve II to a similar chain tilted at an angle of 55° 40′. The vertical form is clearly a stable form for the odd alcohols and the tilted form for the even, but the latter change into the vertical form at some point below fusion. Apparently this change takes place considerably below the melting point since myristyl alcohol C_{14}, m. p. 38°, crystallized from alcohol, gives a spacing corresponding to the vertical form, and cetyl alcohol C_{16}, m. p. 49.0°, exhibits both spacings, thus indicating in the latter case that ordinary room temperature is near the transition point.

The following data were obtained using the Kα-rays of iron reflected from thin layers of the alcohols pressed or fused on a glass strip and mounted on a Müller spectrograph. The intensity distribution indicates that the alcohols crystallize in double molecules with the hydroxyl groups in juxtaposition.

X-RAY DATA FOR NORMAL PRIMARY ALCOHOLS

No. of carbon atoms	12	14	16	18	19	21	22	24	25
M. p., °C.....	23.0	38.0	49.0	59.0	62.0	68.5	72.0	76.5–77	78.5
Spacing, pressed layer, Å.....	..	39.7	..	41.35	52.75	57.4	49.95	54.0	68.5
Spacing, melted, layer, Å.....	34.8	..	37.4 44.9	50.2	52.8	56.9	...	.....	..

It is hoped that these data will be of service to those working on the higher natural alcohols since x-ray analysis promises to afford a ready method of identification. In particular it should be useful in distinguishing between those higher alcohols of adjacent carbon content that are so difficult to identify by purely chemical means. In a subsequent paper it is hoped to give an account of the x-ray data for long-chain nitriles and iodides.

The writer wishes to express his thanks to Mr. S. H. Piper for his friendly interest in this work.

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