48. *Evidence from Surface Films on the Constitution of Batyl and Chimyl Alcohols.*

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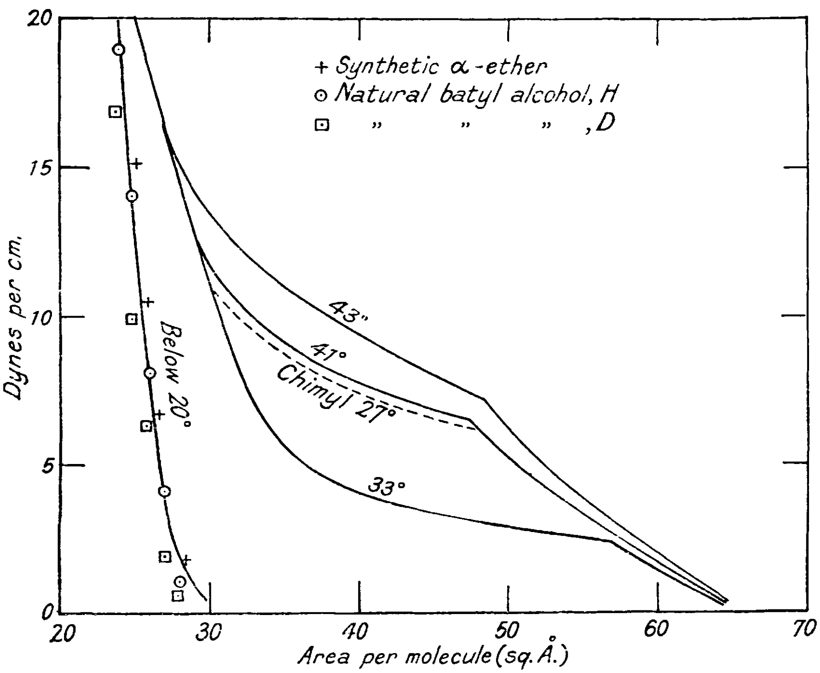
KNIGHT (*Biochem. J.*, 1930, **24**, 257), finding a close similarity between unimolecular surface films, on water, of batyl and chimyl alcohols and the α-monoglycerides (III), concluded



that batyl alcohol was the α-octadecyl glyceryl ether (I) and not the β-ether (II), which would be expected to give a totally different type of film. Davies, Heilbron, and Owens (J., 1930, 2542) synthesised α-octadecyl glyceryl ether, and observed a very slight depression in its m. p. in admixture with natural batyl alcohol, indicating that possibly batyl alcohol is not the α-ether.

(I.) $C_{18}H_{37}\cdot O\cdot CH_2\cdot CH(OH)\cdot CH_2\cdot OH$

(III.) $C_{15}H_{31}\cdot CO\cdot O\cdot CH_2\cdot CH(OH)\cdot CH_2\cdot OH$

$C_{18}H_{37}\cdot O\cdot CH<\begin{matrix}CH_2\cdot OH\\ CH_2\cdot OH\end{matrix}$ (II.)

The surface films of two specimens of batyl alcohol (H, from Professor Heilbron; D, from Professor Drummond), of synthetic α-octadecyl glyceryl ether, kindly sent by Professor Heilbron, and of chimyl alcohol (from Professor Drummond) have therefore been examined on water by the method of Adam and Jessop (see "The Physics and Chemistry of Surfaces," 1930, pp. 38—42, Clarendon Press). The films of batyl alcohol and the synthetic ether were examined at several temperatures between 1° and 43°. They were completely condensed films (of the close-packed head type, not much rearranged on lateral compression), below 20°. Points for the three specimens agreed within the experimental error of about 1 sq. Å. At higher temperatures, the expanded films were also identical within experimental error for the three substances, as were also the transition regions (at all temperatures) between the expanded and the condensed state.

Chimyl alcohol also gave very similar films, but in this case the temperature at which the condensed film changed to the expanded was about 15° lower, as would be expected for a substance of similar constitution, but with two fewer carbon atoms in the long chain.

The figure gives the results, with surface pressures plotted vertically and areas per mol. horizontally; the constants of the films are as follows, Knight's figures, which are in good agreement with the present work, being given in parenthesis.

	Area of condensed film, at no compression (± *ca.* 1 sq. Å.).		Area of expanded film, at no compression (± *ca.* 3 sq. Å.).		† Temp. of half expansion 1·4 dynes/cm. (± 2°).	
Batyl alcohol and α-octadecyl glyceryl ether	27	(26)	64	(60)	31°	(35·5°)
Chimyl alcohol	—	(28·6)	64	(65)	18·5	(17·5)
α-Monopalmitin *	26·3	—	70	—	17·5	—

* See Adam, Berry, and Turner, *Proc. Roy. Soc.*, 1928, *A*, **117**, 535.

† Knight's half expansion temperatures refer to a pressure of 2 dynes/cm., which should give a temperature 1—2° higher than 1·4 dynes/cm.

In view of the complete identity in properties between the surface films of both specimens of natural batyl alcohol and synthetic α-octadecyl glyceryl ether, and of the close similarity of films of batyl and chimyl alcohols to those of the α-monoglycerides, the evidence appears very strong that Knight's conclusion, that batyl alcohol is α-octadecyl glyceryl ether, and chimyl alcohol is α-hexadecyl glyceryl ether, is correct.

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