Summary

Ten branched chain alcohols have been isolated from the unsaponifiable part of wool wax and identified. They comprise the dextro-rotatory ante-iso alcohols of odd carbon number, C_{17} to C_{27}, and the iso alcohols of even carbon number, C_{20} to $_{26}$26.

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REFERENCES

1. Drummond, J. C., and Baker, L. C., J. Soc. Chem. Ind., *48*, 232T (1929).
2. Kuwata, T., and Katuno, M., J. Soc. Chem. Ind. Japan, *41*, Suppl. binding, 227 (1938).
3. Darmstädter, L., and Lifschütz, J., Ber., *7*, 570 (1874).
4. Röhmann, F., Biochem. Z., *77*, 298 (1916).
5. Heiduschka, A., and Nier, E., J. prakt. Chem., *149*, 98 (1937).
6. Tiedt, J., and Truter, E. V., Chem. and Ind., p. 911 (1951).
7. Horn, D. H. S., and Hougen, F. W., Chem. and Ind., p. 670 (1951).
8. Weitkamp, A. W., J. Am. Chem. Soc., *67*, 447 (1945).
9. Barnes, C., Curtis, R. G., and Hatt, H. H., Aust. J. Applied Sci., *3*, 88 (1952).
10. Hackmann, J. T., Dutch Patent 65,260 (1950).
11. Murray, K. E., J. Am. Oil Chem. Soc., *28*, 213 (1951).
12. Murray, K. E., and Schoenfeld, R., J. Am. Oil Chem. Soc., *28*, 461 (1951).
13. Weitkamp, A. W., J. Am. Oil Chem. Soc., *24*, 236 (1947).
14. Zimmerschied, W. J., Dinerstein, R. A., Weitkamp, A. W., and Marschner, R. F., Ind. Eng. Chem., *42*, 1300 (1950).
15. Pollard, A., Chibnall, A. C., and Piper, S. H., Biochem. J., *25*, 2115 (1931).
16. Cason, J., and Winans, W. R., J. Org. Chem., *15*, 148 (1950).
17. Velick, S. F., and English, J., J. Biol. Chem., *160*, 473 (1945).
18. Arosenius, K. E., Ställberg, G., Stenhagen, E., and Tägtström-Eketorp, B., Ark. Kem. Mineral. Geol., A, *26*, 1 (1948).
19. Ginger, L. G., J. Biol. Chem., *156*, 453 (1944).
20. Von Rudloff, E., Chem. and Ind., p. 338 (1951).
21. Gillespie, D. T. C., J. Textile Inst., *39*, 64 (1948).

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Letter to the Editor:

THE recent paper of Joubert and Sutton (2) in the July 1952 issue of the Journal is an interesting contribution to the study of heat-bodied oils. The experimental results presented are of considerable importance, but it is felt that the conclusions drawn from these results are not necessarily valid.

Estimation of the amount of dimeric methyl esters from the results of a molecular distillation is questionable since separation by this method is notoriously poor. If the reasoning used by the authors is applied to the methyl esters from the polymeric fraction, a dimer content of 10% is obtained. This is clearly low since the least heavily bodied oil should yield at least 33% dimer acids in the polymeric fraction.

The saponification equivalent is not a reliable index of the degree of polymerization since dimer and trimer esters have the same saponification values as the monomer. Any loss of ester function would increase the saponification value but probably decrease molecular weight.

The authors do not provide an estimate of the content of the various unsaturated esters in their oil, nor do they note the iodine value of their oil before bodying. Without this information it is impossible to estimate the amount of interpolymer. With the higher content of non-polymerizing esters and the presence of esters more unsaturated than linolenate esters, it would be expected the interpolymer content would be much lower at every stage of the bodying than with linseed oil (1).

The fact that Joubert and Sutton did find dimeric esters in their unpolymerized fraction is, we believe, corroboratory evidence for the formation of interpolymer in heat bodied pilchard oil. That the content is not so high as might be expected is due to inadequacies in their analytical methods and the structure of the oil used.

Joubert and Sutton feel that assumptions made in the study of the mechanism (1) are unproven and of doubtful validity. They have not however amplified their position or supplied details. Since the publication of this paper the mechanism of polymerization has been exhaustively studied (4), and it is not apparent where the assumptions are in error.

The interpolymer theory was sponsored as an explanation of changes in the physical and chemical properties of oils observed during heat-bodying. Other workers in the field (3) have also suggested the formation of an interpolymer without knowledge of the paper (1) cited above.

Polymerization of glycerides with a high content of unsaturated acids in dilute solution has been suggested (5) as the crucial test of the formation of interpolymers in the heat-bodying process. It is felt that the work of Joubert and Sutton confirms rather than negates the formation of interpolymers on heat-bodying of oils.

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REFERENCES

1. Adams, H. F., and Powers, P. O., J. Applied Physics, *17*, 325 (1946).
2. Joubert, F. J., and Sutton, D. A., J. Am. Oil Chem. Soc., *29*, 287 (1952).
3. Maschka, A., and Mendl, A., J. Polymer Sci., *5*, 429 (1950).
4. Pasckhe, R. F., and Wheeler, D. H., J. Am. Oil Chem. Soc., *26*.
4. Paschke, R. F., and Wheeler, D. H., J. Am. Oil Chem. Soc., *26*, 278 (1949).
5. Powers, P. O., J. Polymer Sci., *5*, 741 (1950).