Pyrolysis of Alkyl Sulphoxides

By I. D. ENTWISTLE and R. A. W. JOHNSTONE

(*M.R.C. Unit, The University, Exeter, and The Robert Robinson Laboratories, University of Liverpool*)

A RECENT publication[1] discussing the possible value of the pyrolysis of sulphoxides as a synthetic method for the preparation of olefins prompts us to record some of our results. In our work we wished to prepare a series of vinyl compounds $CH_3 \cdot [CH_2]_n \cdot CH=CH_2$ (I; where n is even). The homologues where n is odd are readily obtained from the corresponding alcohols by dehydration.

[1] C. Walling and L. Bollyky, *J. Org. Chem.*, 1964, **29**, 2699.

Treatment of the anion of dimethyl sulphoxide[2] with a normal primary bromide, $CH_3 \cdot [CH_2]_n \cdot CH_2Br$, for 3 hours at room temperature gave good yields of the sulphoxide, $CH_3 \cdot [CH_2]_n \cdot CH_2 \cdot CH_2 \cdot SO \cdot CH_3$ (II), usually crystalline. Pyrolysis of the sulphoxide (II) to the vinyl olefin (I) was conveniently carried out by refluxing in dimethyl sulphoxide. For example, the sulphoxide (II; $n = 10$), m.p. 59—60° (petroleum), was obtained in 73% yield. Refluxing this sulphoxide for 30 minutes in dimethyl sulphoxide afforded tridec-1-ene (80%).

In a variation of this procedure an alcohol, $R \cdot CH_2 \cdot OH$ ($R = n\text{-}C_{15}H_{31}$), was converted by toluene-*p*-sulphonyl chloride in pyridine at 0°C for 2 hours into its toluene-*p*-sulphonate, m.p. 44° (ethanol). This sulphonate was added to dimethyl sulphoxide anion ("dimsylsodium") at room temperature and set aside for 2 hours to give the sulphoxide (II; $n = 14$), m.p. 73—74° (petroleum), in 85% yield. Refluxing in dimethyl sulphoxide gave heptadec-1-ene.

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[2] E. J. Corey and H. Chaykovsky, *J. Amer. Chem. Soc.*, 1962, **84**, 866.