Experimental. The materials and the thermostat equipment were as specified earlier.[1] The equilibrated solution (1 g/100 ml) was silylated with trimethylchlorosilane and hexamethyldisilazane as described by Sweeley *et al.*[3] To secure full silylation the reaction mixture was kept at room temperature for 8 h. The precipitated salts were removed by decantation and the solution was concentrated *in vacuo*, and the TMS-ethers were extracted with hexane.

The gas chromatograph used was a Varian Aerograph, Model 80-P, equipped with a thermal conductivity detector. The chromatography was carried out isothermally (225°C) in an aluminium column (1.7 m × 6 mm) containing 20 % SE-30 on Chromosorb W (60–80 mesh). The combined GLC-mass spectrometric studies were carried out with an Atlas Varian CH7 mass spectrometer using a ionizing energy of 70 eV. Again the GLC was performed with SE-30 as the stationary phase.

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1. Gram, F., Hveding, J. A. and Reine, A. *Acta Chem. Scand. In press.*
2. Communicated to the 11th National Meeting of the *Norwegian Chemical Society*, June 1970, and briefly reported in *Tidsskr. Kjemi, Bergvesen Met.* **30** No. 6 (1970) 8.
3. Sweeley, C. C., Bentley, R., Makita, M. and Wells, W. W. *J. Am. Chem. Soc.* **85** (1963) 2497.
4. DeJongh, D. C., Radford, T., Hribar, J. D., Hanessian, S., Bieber, M., Dawson, G. and Sweeley, C. C. *J. Am. Chem. Soc.* **91** (1969) 1728.

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Sterical Orientation in Diels-Alder Dimerisation of *o*-Quinols

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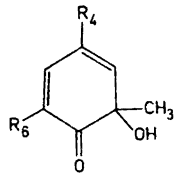
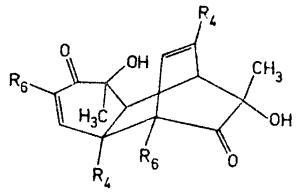
The Diels-Alder dimerisation of *o*-quinols and similar *o*-quinoid compounds gives usually only one of the conceivable stereoisomers. The reaction is considered to be governed by the *endo* rule, by the rule of the lowest dipole moment of the transition state,[1] and by steric requirements.[2,3] From these it follows that the dimer structure should be one of the types *4* – *6* (Fig. 1). For



1-3



4-6

1 $R_4 = R_6 = H$ *4*
2 $R_4 = H$, $R_6 = CH_3$ *5*
3 $R_4 = CH_3$, $R_6 = H$ *6*

a discussion of this subject, see Adler *et al.* A complete structure has, however, been established only for the dimer (Fig. 1, *4*) of 2-methyl-*o*-quinol (Fig. 1, *1*) by a chemical and spectral investigation [4] and an X-ray diffraction analysis.[5]

By X-ray analysis we have now found that the dimers of 2,6-dimethyl-*o*-quinol (Fig. 1, *2*) and 2,4-dimethyl-*o*-quinol (Fig.