

crude mixture was heated with the sodium derivative of benzyl alcohol, but the desired ether was not obtained.

The attempted preparation of the *p*-toluenesulphonyl ester of the alcohol by the Schotten-Baumann reaction also failed. When the preparation of this ester was attempted by refluxing a solution of the alcohol (1 g.) in dry toluene (10 ml.) with *p*-toluenesulphonyl chloride (1 g.) for 6 hours, and then diluting with dry ether (40 ml.), an oil separated and quickly solidified. This was recrystallised from alcohol/ether to give rosettes of white needles (0.4 g.) of *6-morpholino-4:4-diphenylhexan-3-ol p-toluene sulphonate* of m.pt. and mixed m.pt. with authentic sample of 182° to 183°C. Found: C, 68.3; H, 7.4; N, 2.9 per cent.  $C_{22}H_{29}O_2N$ ,  $C_7H_9O_3S$  requires C, 68.1; H, 7.2; N, 2.7 per cent.

*6-Morpholino-4:4-diphenylhexan-3-ol p-toluene sulphonate.*

To a solution of the alcohol (II; R = H) (0.15 g.) and *p*-toluene sulphonic acid (0.08 g.) in hot absolute alcohol (1 ml.), dry ether (10 ml.) was added. Upon cooling, rosettes of white needles separated, m.pt. 181° to 182°C. Recrystallisation from ether/ethyl alcohol gave rosettes of white needles, m.pt. 182° to 183°C.

#### REFERENCES

1. Report No. 981, Office of the Publication Board, Washington, D.C., p. 84.
2. B.I.O.S. Final Report No. 116. Item No. 24, p. 51.
3. Speeter, Byrd, Cheney and Binkley, *J. Amer. chem. Soc.*, 1949, **71**, 57.
4. Dupré, Elks, Hems, Speyer and (in part) Evans, *J. chem. Soc.*, 1949, 501.
5. *Organic Reactions*, John Wiley and Sons, **2**, p. 204.
6. *Organic Reactions*, John Wiley and Sons, **2**, p. 204 footnote.
7. May and Mosettig, *J. org. Chem.*, 1948, **13**, 459.
8. *Hickinbottom Reactions of Organic Compounds*, Longmans, Green and Co., 1936, 70.
9. Huang-Minlon, *J. Amer. chem. Soc.*, 1946, **68**, 2487.
10. Small, *New York Acad. Sci.*, 1948, **51**, 18.
11. Thorp, *Brit. J. Pharmacol.*, 1946, **1**, 113.
12. Dodds, Lawson, Simpson and Williams, *J. Physiol.*, 1945, **104**, 47.
13. Adamson, *J. chem. Soc.*, 1949, S153.

### FLUORIMETRIC AND MICROBIOLOGICAL ASSAYS OF RIBOFLAVINE IN MALTED PREPARATIONS

BY CHLOE KLATZKIN, F. W. NORRIS AND F. WOKES

*This Journal*, 1949, **1**, 915-930

#### Correction

Page 928, lines 40-42, *should read*: The low solubility of the blue fluorescent substance in chloroform prevented its efficient removal by the latter, which has been recommended for purifying extracts<sup>10</sup>.