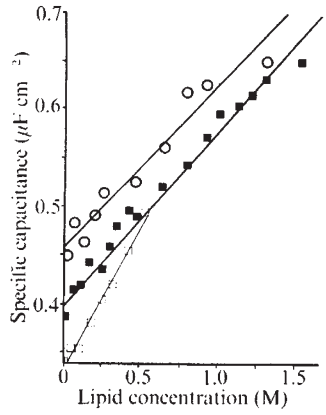

Fig. 1 Concentration dependence of lipid bilayer capacitance. The linear increase in membrane specific capacitance (C_s) with increasing membrane forming solution lipid molarity is attributed to a reduction of the amount of residual solvent within the thin bilayer. The rate of change of C_s is nearly the same for bilayers formed from monoolein/decane (■) and monoolein/hexane (○) solutions but it is greater for membranes made from lecithin/decane (□) solutions. Bilayer dielectric thickness d (nM) could be calculated from $d = 8.85 \times 10^{-7}\ D/C_s$ with $D = 2.14$.

The concentration dependence of C_s seems to explain the thickness differences that have been consistently observed for BLMs formed by the Mueller and Rudin bulk solution technique[1] and the Montal and Mueller monolayer technique[8]. For example, at a lipid concentration of 1.5 M, which is near the upper concentration limit for membrane formation, we observe a capacitance of 0.649 μF cm^{-2} (±0.019 s.d.) for BLMs made from monoolein in decane. This large C_s value exceeds that reported for nearly solvent free bilayers from dilute monoolein/hexadecane bulk solutions (0.62 μF cm^{-2}) (ref. 4) and approaches the value reported for BLMs formed from monoolein/hexane monolayers (0.735 μF cm^{-2}) (ref. 7). We have considered the possible influence of the solvent species in order to explain the small capacitance difference between BLMs formed from concentrated lipid solutions and from monolayers. Figure 1 shows the observed concentration dependence of the capacitance for monoolein BLMs made from the hexane containing solutions. The C_s–M relationship for this lipid–solvent system is well described ($r = 0.97$) by a linear regression line drawn to the equation $C_s = 0.17\ M + 0.446$. Indeed, the overall dielectric behaviour of the bilayers from hexane solutions is very similar to that of bilayers from the decane solutions. The primary effect of using hexane rather than decane as a lipid solvent is a displacement of C_s to larger values corresponding to a 0.7 nm decrease in the bilayer hydrocarbon thickness at equal lipid concentrations. The largest value of C_s obtained for BLMs from the monoolein/hexane bulk solution was 0.666 μF cm^{-2} at a concentration of 1.3 M, beyond which BLMs could not be formed. This C_s value is slightly less than that reported for so-called solventless bilayers made from monolayers. The similarity of the maximal C_s values for membranes made from concentrated lipid bulk solutions and from solvent depleted monolayers suggests that both techniques are nearly equivalent in yielding BLMs which are virtually solvent free.

We have explored the generality of our observation of concentration dependent bilayer capacitances by measuring C_s values of membranes formed from a heterogeneous biological phospholipid (lecithin, Sigma type II s—a phospholipid extract of soy beans). Bilayers of this lipid exhibited C_s values that increase with the lipid concentration of the forming solutions. Furthermore, as shown in Fig. 1, this increase is well described ($r = 0.98$) by the regression equation $C_s = 0.30\ M + 0.331$ (molecular weight 800; density, 1). Compared with monoolein bilayers, the phospholipid bilayers have smaller C_s values which increase more steeply with lipid concentration. Nonetheless, the overall features of the concentration dependence of C_s are essentially the same. It seems that for a variety of lipids, it is possible to deplete the solvent content of bilayers by using highly concentrated (that is, alkane depleted) bulk solutions. The concentration dependence of dielectric thickness is expected to be useful not only for providing BLMs which continuously encompass a wide range of thicknesses, but also for forming nearly solventless BLMs using the conventional bulk solution technique.

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Errata

In the letter 'Apomixis may be widespread among trees of the climax rain forest' by A. Kaur *et al. Nature* **271**, 440–442, in paragraph 2 line 12, for 'tiploidy' read 'triploidy'. In paragraph 6 line 19 should read: *macroptera* it is, and it is . . . .

In the article 'Silicalite, a new hydrophobic crystalline silica molecular seive' by E. M. Flanigan *et al. Nature* **271**, 512–516, in paragraph 5 line 3 for 2 d read 2 h; in line 5 for $0k1, k+1$ read $0kl$, $k+l$. In paragraph 6 line 11 should read . . . has the same topology as that reported for 'shape-selective' . . . In Fig. 1 legend for *c* read *b*.

In the letter 'Estimate of the volatile nitrosamine content of UK food' by T. A. Gough *et al. Nature* **272**, 161–163 the abscissa in Fig. 1*c* should read 0.01, 0.1 and 1.0 and not 0.01, 0.1 and 10.

Corrigendum

In the letter 'The neural representation of visual space' by N. Drasdo, *Nature* **266**, 554; in paragraph 1 line 11 for $\sqrt{D_o}$ read D_o. In Fig. 1 displace the symbol □ at 10° on nasal meridian 2.4 mm upwards. On page 555 paragraph 3 line 13 for 15.6 read 15.1.