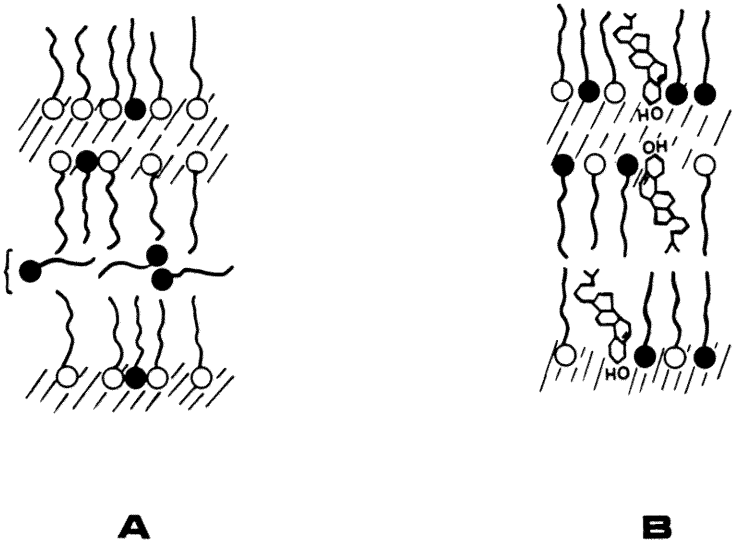

Figure 3.6 (A) The added phosphatidylethanolamine being localized between the methyl group layers. (B) The added cholesterol brings the added phosphatidylethanolamine into the space between the chains.

cholesterol brings the added phosphatidylethanolamine that was earlier located between the methyl group layers (see Fig. 3.6A) into the space between the chains (see Fig. 3.6B). The high values of the interlayer spacings after addition of cholesterol (see curve C, Fig. 3.3) are a consequence of reduced water penetration into the lipid parts when compared with conditions for curves A and B.

This type of information is definitely useful to clarify the organization–functional relationship for the stratum corneum lipids. The primary source of the information is the x-ray diffraction results, but their interpretation is based on an assumption of no change in order of the amphiphilic chains nor in their tilt. Nuclear magnetic resonance offers a means to confirm the interpretation of the results from the low-angle x-ray diffraction and, in addition, it provides direct information about the order of the individual molecules and groups involved.

B. Order Parameters of Lipid Groups

A deuterated proton site on the lipid molecule gives rise to a quadrupolar splitting of the NMR signal through the interaction with elec-