## Workshop 23 Solutions Alcohols from Alkylmetal Reagents

Unless I've indicated specifically that only one alkylmetal reagent is possible, either alkyllithiums or Grignard reagents can be used. (They are interchangeable.)

Br 
$$\xrightarrow{Mg, Et_2O}$$
  $\xrightarrow{MgBr}$   $\xrightarrow{1.}$   $\xrightarrow{OH}$   $\xrightarrow{OH}$   $\xrightarrow{P}$   $\xrightarrow{P}$ 

or

Br 
$$\xrightarrow{\text{Mg, Et}_2\text{O}}$$
  $\xrightarrow{\text{MgBr}}$   $\xrightarrow{\text{1. O}}$   $\xrightarrow{\text{H}}$   $\xrightarrow{\text{H}}$   $\xrightarrow{\text{H}}$   $\xrightarrow{\text{H}}$ 

$$CH_3-Br$$
  $\xrightarrow{Li}$   $CH_3-Li$   $\xrightarrow{2. H_3O^+}$   $HO$   $CH_3$ 

Br 
$$Mg, Et_2O$$
  $CH_3$   $CH_3$   $CH_3$   $CH_3$   $CH_3$ 

A number of different sequences the last one could be put together, using two different alkylmetals and a carboxylic acid. Here's one:

$$\begin{array}{c} O \\ O \\ O \\ O \\ CI \end{array} \begin{array}{c} O \\ O \\ CI \end{array} \begin{array}{c} O \\ CI \end{array} \begin{array}{c} (CH_3)_2CuLi \\ O \\ CI \end{array} \begin{array}{c} O \\ CH_3 \end{array}$$