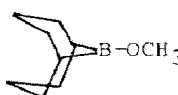
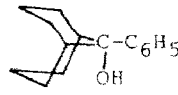
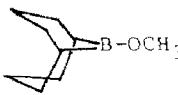
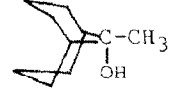
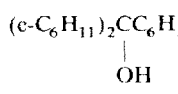
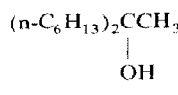
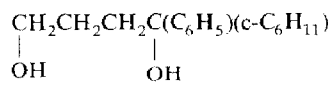
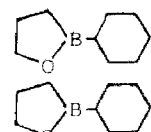
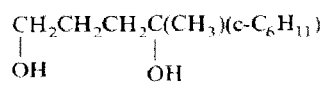
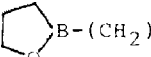
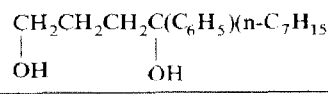




Table 1

Synthesis of tertiary alcohols and 1,4-alkanediols

Entry	Substrate 1	R of 2	Product <sup>a</sup>	Yield (%) <sup>b</sup>
a		C <sub>6</sub> H <sub>5</sub>		72
b		CH <sub>2</sub>		86
c	( <i>c</i> -C <sub>6</sub> H <sub>11</sub> ) <sub>2</sub> BOCH <sub>3</sub>	C <sub>6</sub> H <sub>5</sub>		74
d	( <i>n</i> -C <sub>6</sub> H <sub>13</sub> ) <sub>2</sub> BOCH <sub>3</sub>	CH <sub>3</sub>		67
e		C <sub>6</sub> H <sub>5</sub>		62
f		CH <sub>3</sub>		61
h		C <sub>6</sub> H <sub>5</sub>		67

<sup>a</sup> All products were identified by <sup>1</sup>H NMR, IR and MS spectroscopy. <sup>b</sup> Isolated yield.

oxaborolanes or 9-methoxy-9-borabicyclo[3.3.1]nonane with LiCRCl<sub>2</sub> in the same way. The results are listed in Table 1.

In a typical procedure, a slurry of (1,1-dichloroalkyl)lithium in 20 ml of THF was prepared at -100 °C by a published procedure \*. Alkyl borinate [6] (10 mmol) or 2-alkyl-1,2-oxaborolane [3] (10 mmol) was added in one portion at -100 °C with stirring. After 15 min, the cold bath was removed and the mixture was allowed to warm to room temperature with stirring and kept overnight. Then 10 ml of 3*M* NaOH and 2.0 ml of 30% H<sub>2</sub>O<sub>2</sub> were added at ca. 0 °C. The mixture was stirred for 1 h at room temperature and 15 min at 50 °C. The aqueous phase was saturated with K<sub>2</sub>CO<sub>3</sub> and was extracted three times with ethyl ether (60 ml), and the combined organic layers were dried over K<sub>2</sub>CO<sub>3</sub>. The residue was concentrated under vacuum, and purified by column chromatography (silica gel, elution by ethyl acetate and petroleum ether) to give the pure product.

\* (α,α-Dichlorobenzyl)lithium was prepared from benzal chloride (11 mmol) and *n*-butyllithium (11 mmol) in THF at -100 °C [5a]. (1,1-Dichloroethyl)lithium was prepared from 1,1,1-trichloroethane (11 mmol) and *s*-butyllithium [5b].

Trialkylcarbinol can alternatively be prepared from trialkylborane by carbonylation [7], cyanidation [8], or reaction with DCME (dichloromethyl methyl ether) [9], but these methods are of limited use in the synthesis of mixed trialkylcarbinols, since some mixed trialkylboranes are difficult to prepare. Mixed trialkylcarbinols can be produced by reaction of dialkylchloroboranes with lithium aldimines [10]. Our procedure provides a more efficient means of preparing some mixed trialkylcarbinols from alkenes.

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