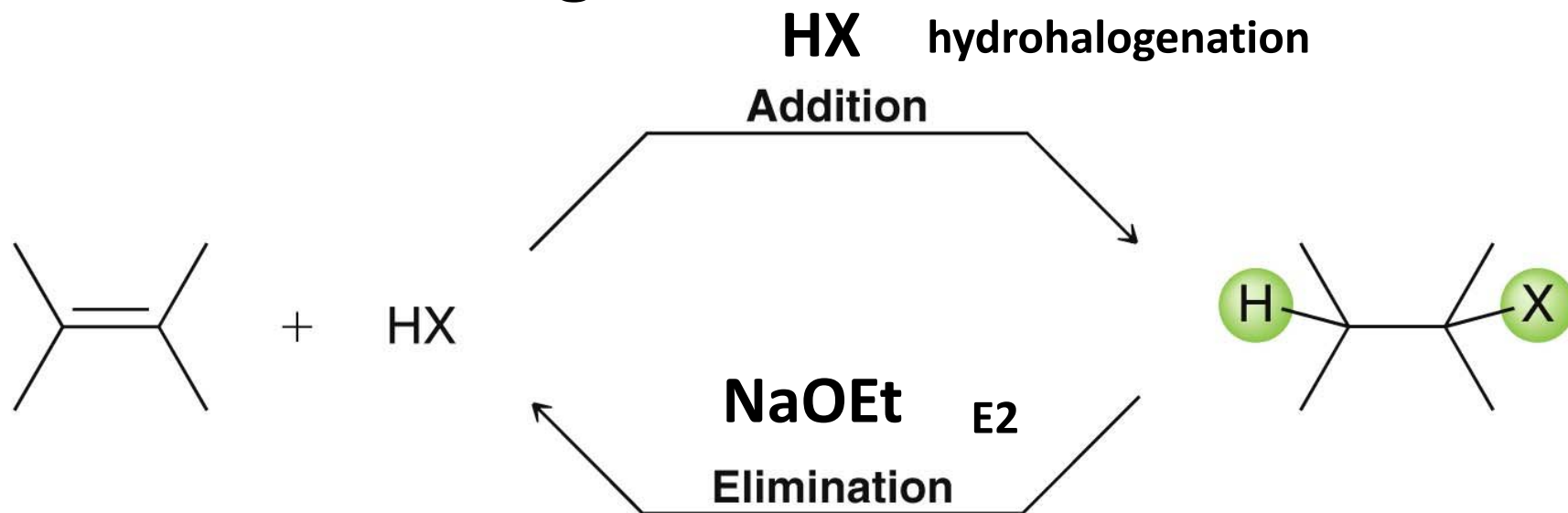


Chapter 8 part 2:

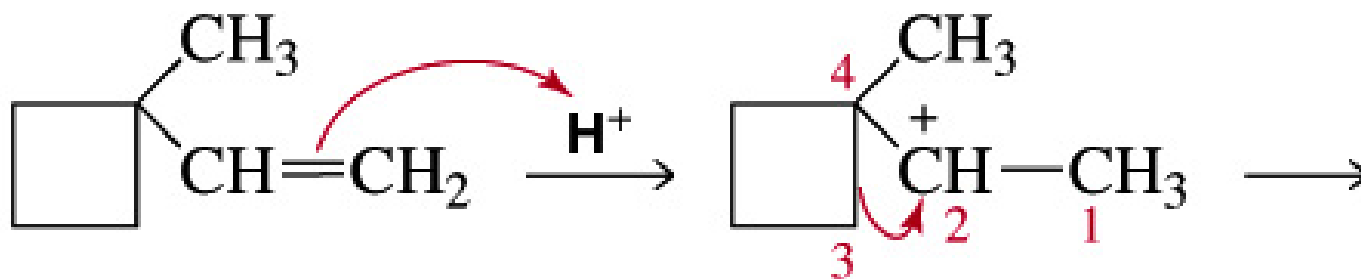
Acid Catalyzed Addition of Water

- Today – (8.4 – 8.7) Addition reactions Acid Catalyzed Hydration/Oxymercuration-Reduction
- Friday – (8.7-8.10) Hydrogenation Halogenation/Halohydrin formation

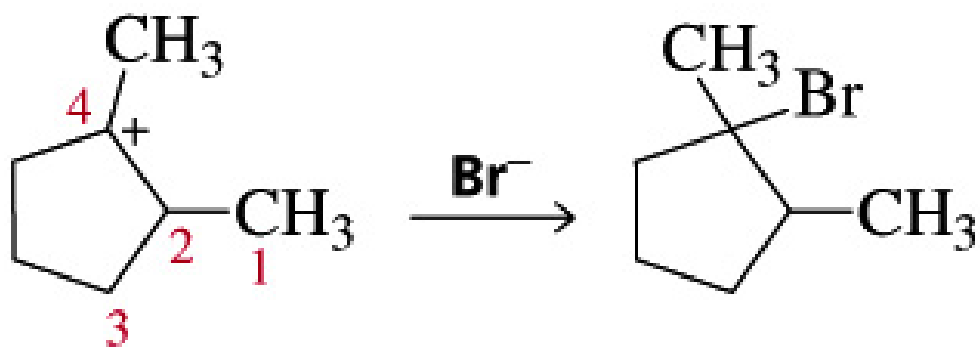
Let's go back a little bit.....



Ring Expansion



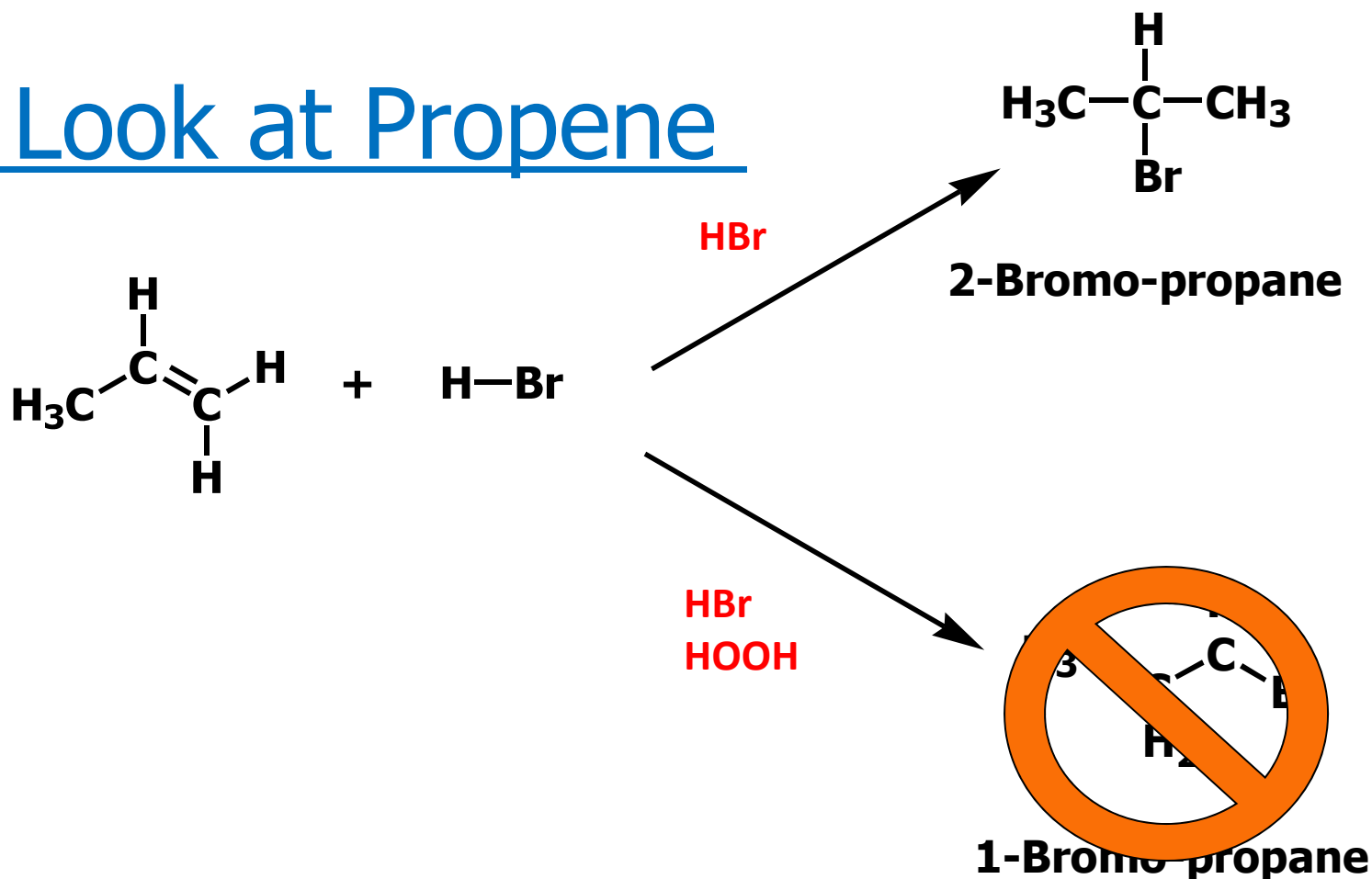
2° carbocation



a more stable
 3° carbocation

Hydrohalogenation – Regiochemistry

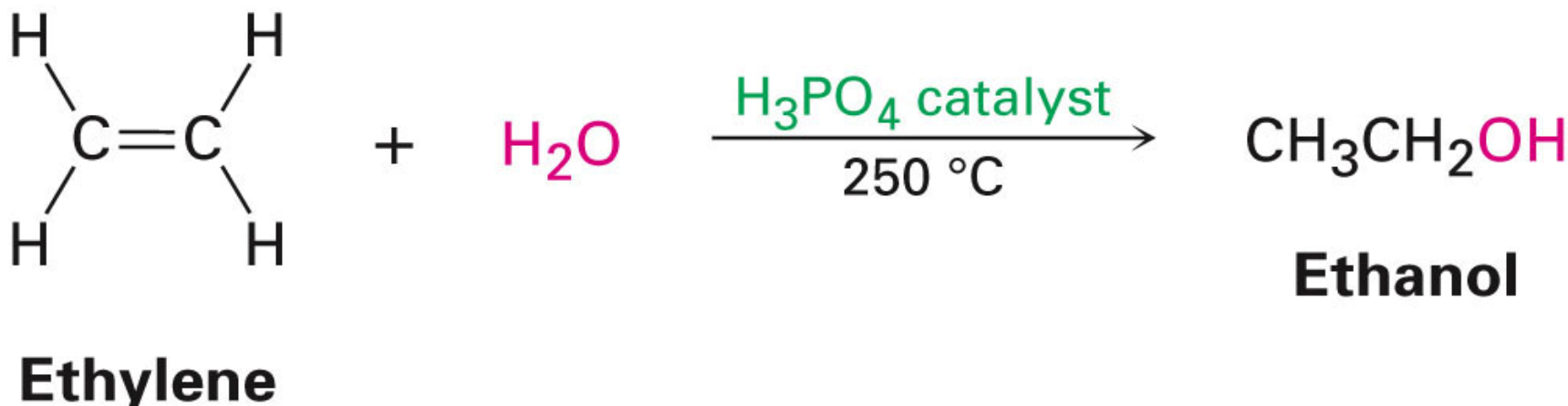
Let's Look at Propene



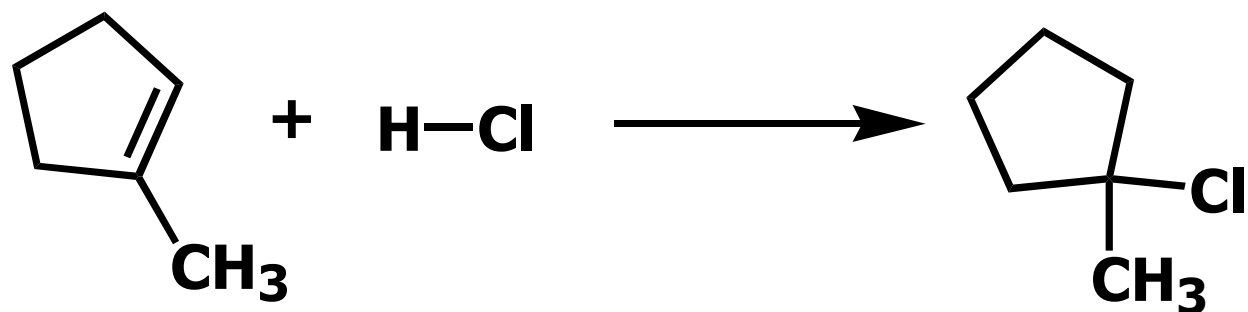
- ▶ This is called a regioselective reaction.
- ▶ In a regioselective reaction, one constitutional isomer is the major or the only product (8.3...)

Addition of Water

- **Hydration of an alkene** is the addition of H-OH to to give an alcohol
- Acid catalysts are used in high temperature industrial processes: ethylene is converted to ethanol

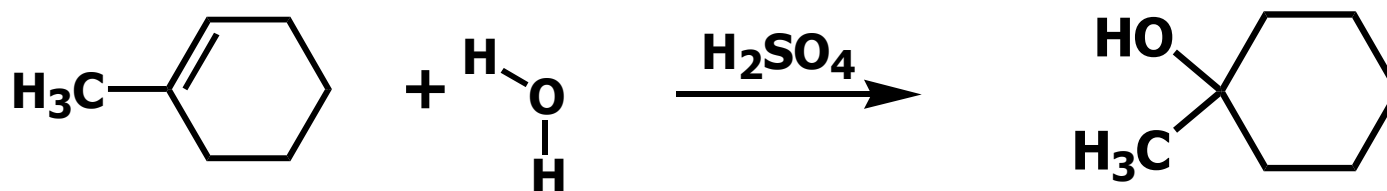


Electrophilic Addition to Alkenes



alkene + **hydrogen halide** → **alkyl halide**

This is called hydrohalogenation.



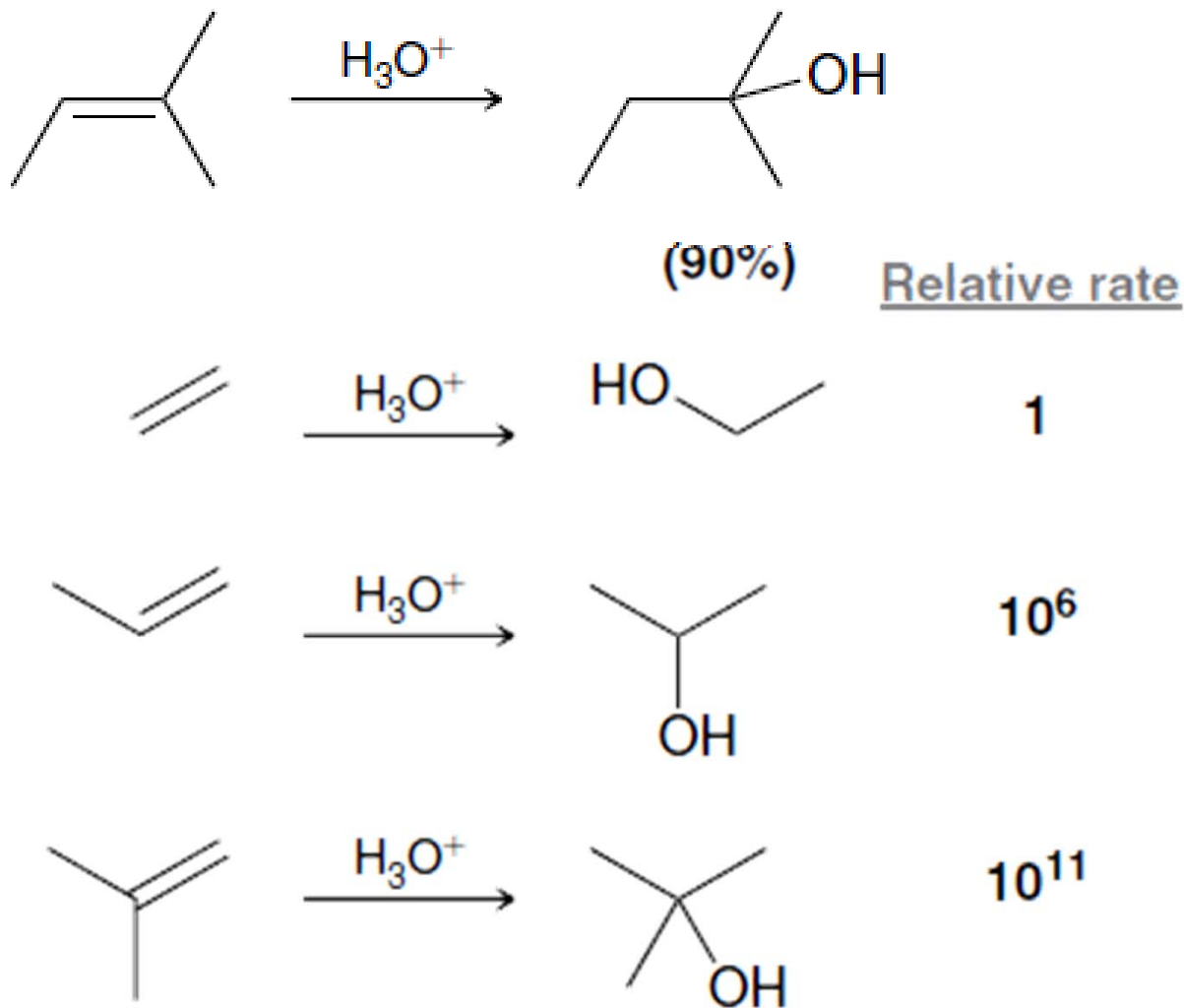
1-methylcyclohexene

alkene + **water** $\xrightarrow{\text{acid}}$ **alcohol**

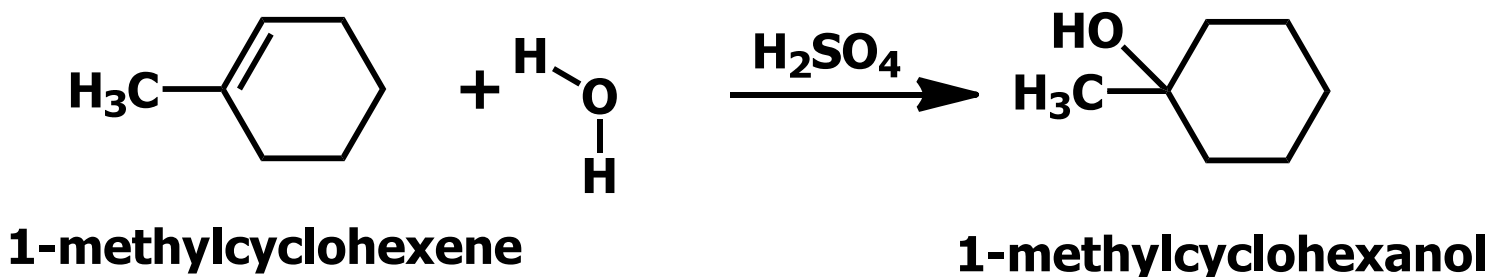
This is called acid-catalyzed hydration.

Acid Catalyzed Hydration

- The components of water ($-H$ and $-OH$) are added across a $C=C$ double bond.

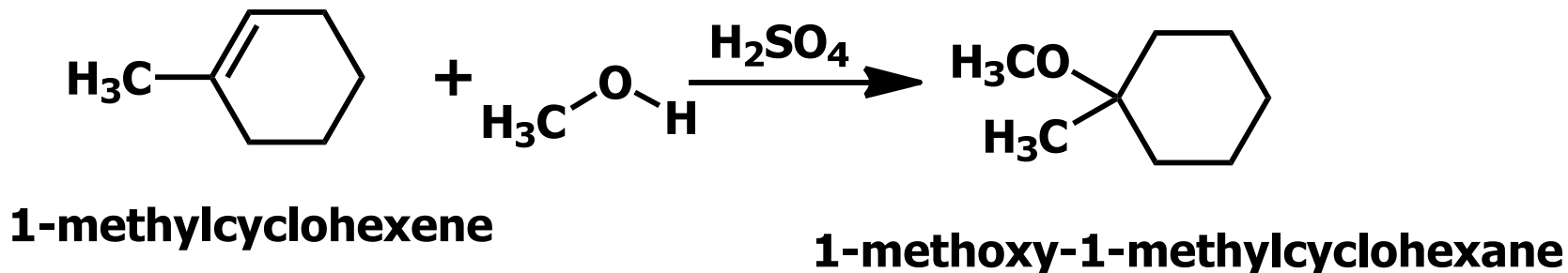


Addition of Water to an Alkene



To make an alcohol

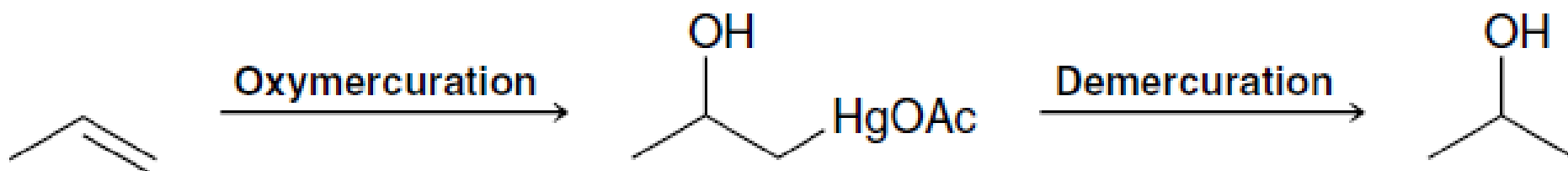
Addition of an Alcohol to an Alkene



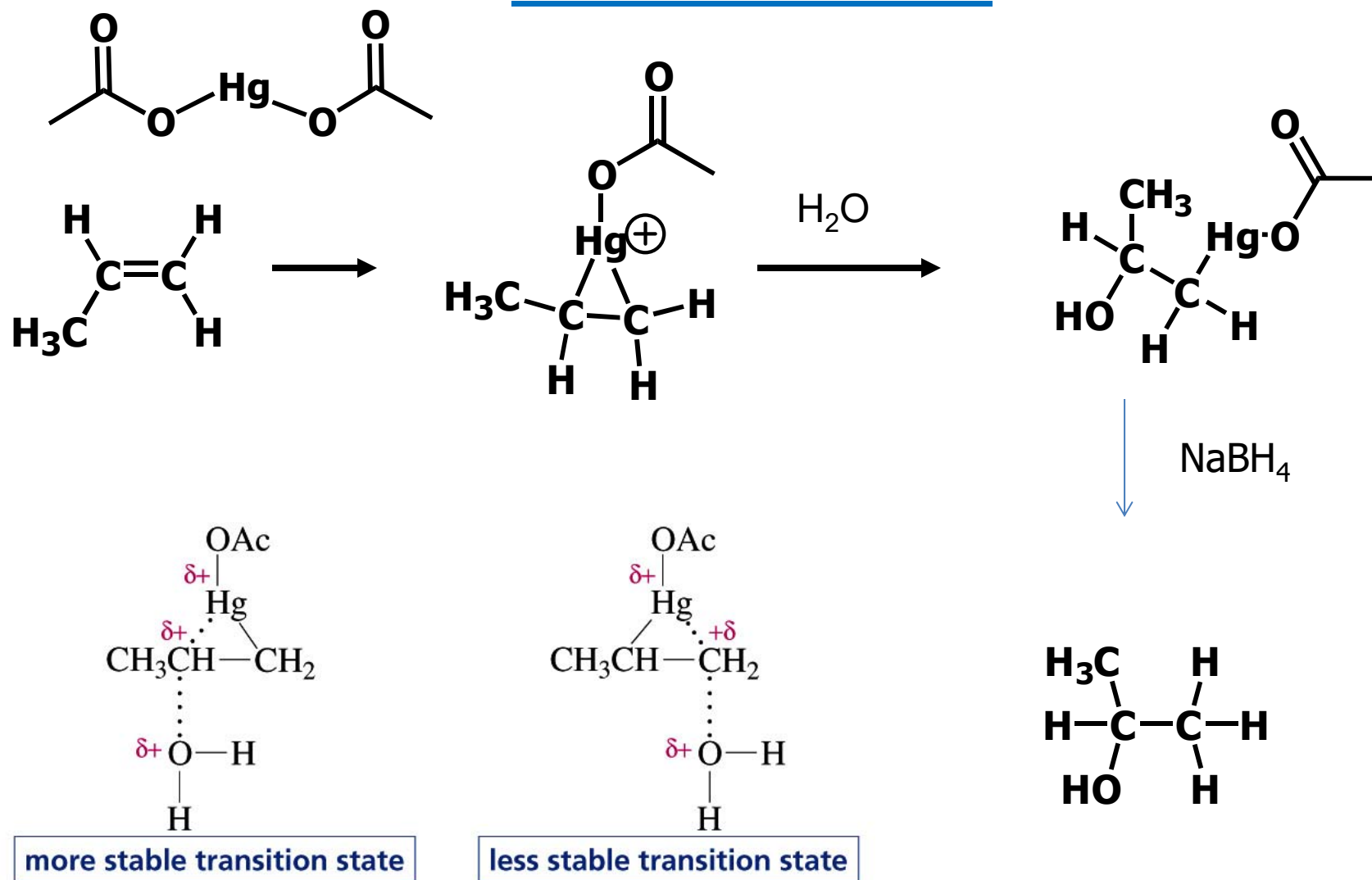
To make an ETHER

Oxymercuration-Demercuration

- Because rearrangements often produce a mixture of products, the synthetic utility of Markovnikov hydration reactions is somewhat limited.
- OXYMERCURATION-DEMERCURATION is an alternative process that can yield Markovnikov products more cleanly.



Oxymercuration-reduction of an Alkene



For Next Time....

Suggested Homework Problems Chapter 8

1, 2, 5, 9, 12,13, 18, 24, 27, 31, 42-46, 52, 57,62,63