Radical-Driven Deoxygenation of Secondary Alcohols: The Barton–McCombie Reaction

**Significance:** The authors reported a very broadly applicable method for the deoxygenation of secondary alcohols, providing complex hydrocarbons in high yields. The alcohol thereby has to be activated by transforming it into its corresponding thioester.

**Comment:** By using a radical mechanism and the favorable formation of an S–Sn bond, these thioesters can be deoxygenated. This concept has been revived in the Barton–McCombie decarboxylation (J. Chem. Soc., Chem. Commun. 1980, 15, 732).

**Proposed mechanism:**

1. Phosgene treatment of the alcohol to form the corresponding thioester.
2. Reaction with Bu₃SnH to generate the radical precursor.
3. Formation of the desired hydrocarbon.

**Selected examples:**

- 67% yield from ergosterol
- 85% yield from α-D-glucopyranose
- 70% yield from α-D-glucofuranose

**Key words:** deoxygenation, secondary alcohols, stannanes

**Category:** Metals in Synthesis