Strychnine strychs again…

Over the years, many routes to Strychnine have been developed, often utilizing new reactions that were discovered or broadly developed in the intervening years since the last reported Total Synthesis. To date, 12 routes have been reported with five being chiral.

Note: For the Bonus questions, if you can’t get the year, take a guess for the decade.
1. Provide the product of the first transformation in the Woodward synthesis & provide the mechanism of this transformation.

What is the name of this reaction?

**Bonus:** What year was the reaction discovered?

**Bonus:** Other notable reactions used in this synthesis are the Mannich, the Pictet-Spengler, and the Dieckman Condensation. Which years were these developed?
2. Provide the mechanism for this key step in the Overman synthesis.

What is the name of this reaction?

**Bonus:** What year was the reaction discovered?

**Bonus:** Another notable reaction used in the Overman synthesis is the Wittig. What year was it discovered?
3. Provide the missing **intermediate** and reasonable **reagents** during several of the key steps in the Bosch synthesis, the first chiral synthesis of Strychnine.

What is the name of the reaction that provides the missing intermediate?

**Bonus:** What year was the reaction discovered?
4. Provide the missing intermediates in the Fukuyama synthesis.

What is the name of the reaction that provides the first missing intermediate?

**Bonus:** What year was the reaction discovered?
5. Provide the missing intermediate and the mechanism to that missing intermediate for this key step in the 2010 Reissig synthesis.

What is the name of the reagent used (IUPAC Samarium(II) iodide) that gives the first missing intermediate?

**Bonus:** Samarium(II) iodide became more widely used after a 1996 publication describing improved reactivity with transition metal salts. What year was the first publication made describing its creation through high temperature decomposition of SmI₃?


