Synthesis of (–)-Virosaine A

Significance: Virosaine A is a highly congested, polycyclic member of the Securinega alkaloid family. In their elegant synthetic approach towards (–)-virosaine A, Gleason and Hughes rely on an epoxide opening to trigger the intramolecular Diels–Alder reaction proposed in its biosynthesis.

Comment: Epoxide opening in oxabicycle F afforded nitrone G, which underwent an intramolecular cycloaddition reaction to give the pentacyclic core structure H. Subsequent alcohol protection and regioselective lithiation/bromination afforded intermediate I, which was converted to (–)-virosaine A by a sequence of five more transformations.