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 \([3+2]\) cycloaddition proposed in its biosynthesis.

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