Synthesis of (–)-Canataxpropellane

**Significance:** (–)-Canataxpropellane is a taxane diterpenoid that was isolated from Taxus canadensis. Gaich and co-workers report the total synthesis of this structurally complex natural product. Key to the synthesis is an intramolecular [2+2] cycloaddition that forms the fully substituted cyclobutane.

**Comment:** Cyclobutane E was assembled in two steps from A and B through Diels–Alder cycloaddition and intramolecular [2+2] cycloaddition. 1O2 cycloaddition of F followed by reductive O–O bond cleavage gave H. Oxidation of diol L and pinacol coupling completed the carbon skeleton.

**Chemical Structures:**

- **A**: Diels–Alder cycloaddition
- **B**: Intramolecular [2+2] cycloaddition
- **C**: 1O2 cycloaddition
- **D**: Pinacol coupling
- **E**: Stille carbonylative cross-coupling
- **F**: Swern oxidation
- **G**: Pinacol coupling
- **H**: 1O2 cycloaddition
- **I**: Stille carbonylative cross-coupling
- **J**: 1O2 cycloaddition
- **K**: Swern oxidation
- **L**: Pinacol coupling
- **M**: Pinacol coupling
- **N**: 1O2 cycloaddition