Significance: Gonzalez-Martinez, Boxer, Burns and co-workers report an impressive total synthesis of a ladderane phospholipid based on strategic [2+2] cycloadditions of bicyclohexene B, which is obtained by means of a Ramberg–Bäcklund ring contraction of sulfoxide A.

Comment: Bicyclohexene B irradiated in the presence of CuOTf gave pentacycle F, which was subjected to an oxidative chlorination–elimination sequence to give cyclobutene I. Enantioselective hydroboration and four further steps yielded [5]-ladderanoic acid.