Significance: Procter and co-workers report the first total synthesis of the guaiane type sesquiterpene (−)-phaeocaulisin A in 19 steps. The natural product exhibits anti-inflammatory and anticancer activity which is likely linked to the bridged acetal moiety.

Comment: On the one hand, chemoselective reduction of the ketone in N requires a tert-butyl ester to render the latter unreceptive for SET. On the other hand, SmI₂-mediated cyclization of R requires the methyl ester, otherwise the lactone in S does not form. Desaturation of S is achieved by α-bromination of the γ-lactone and elimination with silver acetate.