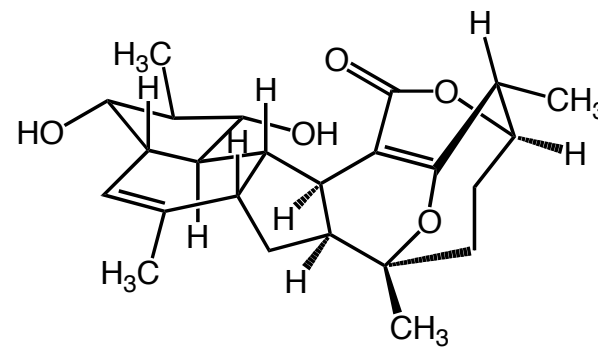
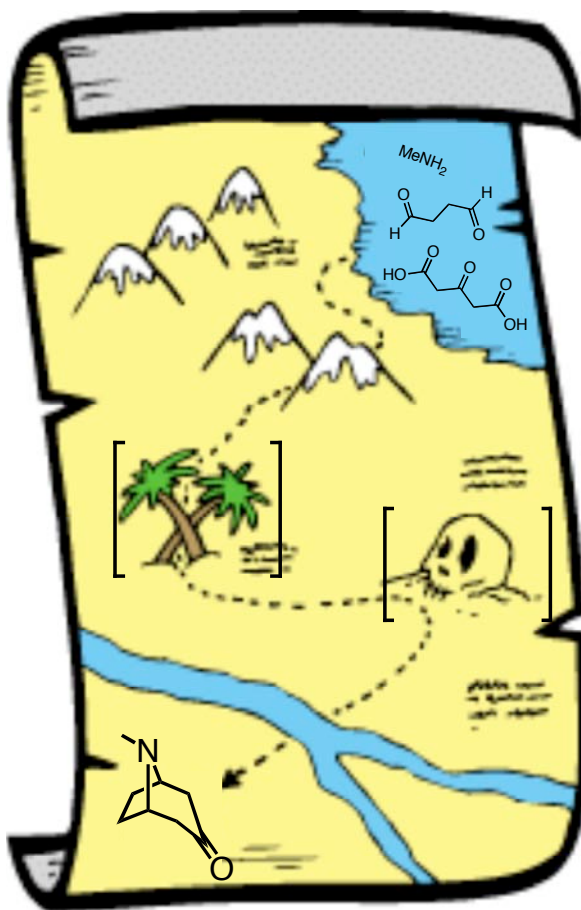
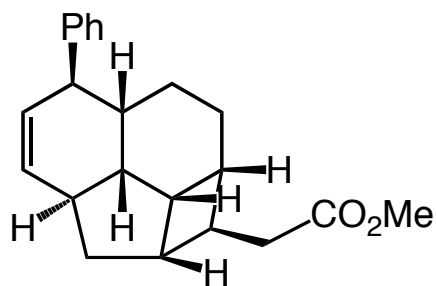
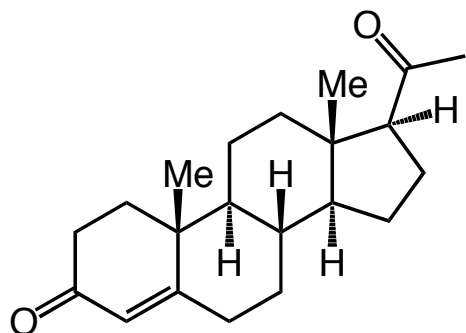


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## BURIED TREASURES: CASCADES WE *HAVEN'T* SEEN



R. Robinson,  
*J. Chem. Soc.*, 1917, 762

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## Cascades Articulated

Main Entry: **1cas·cade**

Pronunciation: (")kas-'kAd

Function: *noun*

Etymology: French, from Italian *cascata*, from *cascare* to fall, from (assumed) Vulgar Latin *casicare*, from Latin *casus* fall, Date: 1641

1: a steep usually small fall of water; *especially* :one of a series

2a : **something arranged or occurring in a series or in a succession of stages so that each stage derives from or acts upon the product of the preceding** <blood clotting involves a biochemical *cascade* > b: a fall of material (as lace) that hangs in a zigzag line

3: something falling or rushing forth in quantity <a *cascade* of sound> <a *cascade* of events>

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3: something falling or rushing forth in quantity <a *cascade* of sound> <a *cascade* of events>

4: **One-pot, sequential reactions involving more than one intermediate, preferably 1) leading to an increase in molecular complexity and 2) without changing reaction conditions**

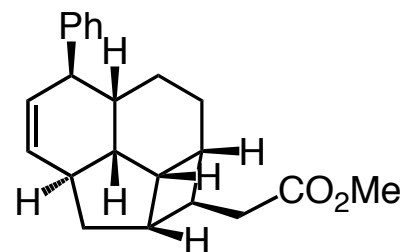
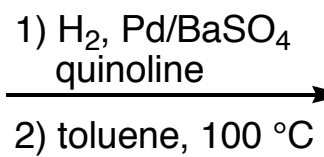
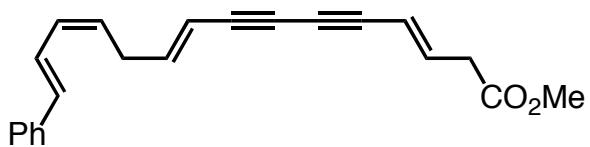
*see: Chem. Commun., 2003, 551*

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## Some Inspiration



Nicolaou, K. C., *J. Amer. Chem. Soc.*, **1982**, 5555

**3 intermediates**

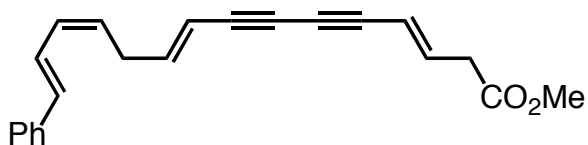
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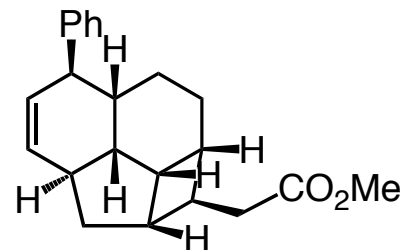
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## Some Inspiration



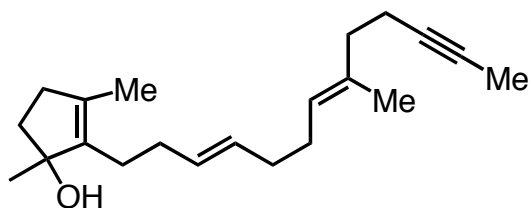
1) H<sub>2</sub>, Pd/BaSO<sub>4</sub>  
quinoline

2) toluene, 100 °C



Nicolaou, K. C., *J. Amer. Chem. Soc.*, **1982**, 5555

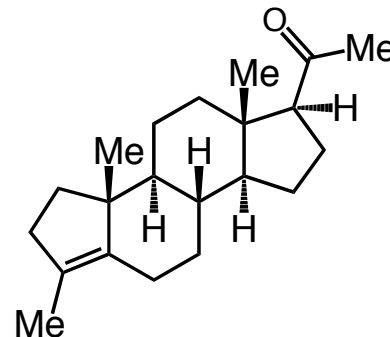
**3 intermediates**



COC(=O)C, TFA,

1,2-dichloroethane;

K<sub>2</sub>CO<sub>3</sub>, H<sub>2</sub>O, MeOH



Johnson, W. S., *J. Amer. Chem. Soc.*, **1971**, 4330

**2 intermediates**

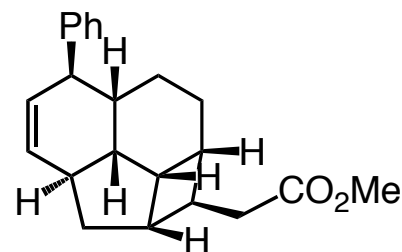
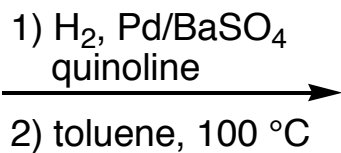
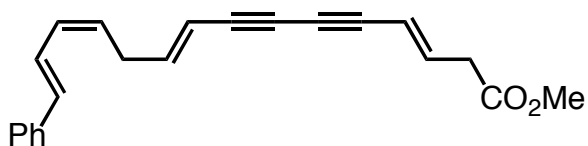
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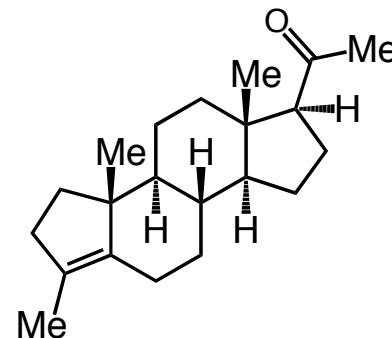
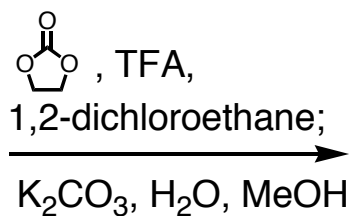
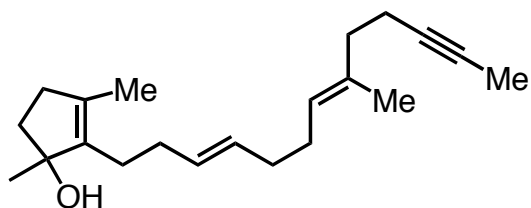
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## Some Inspiration



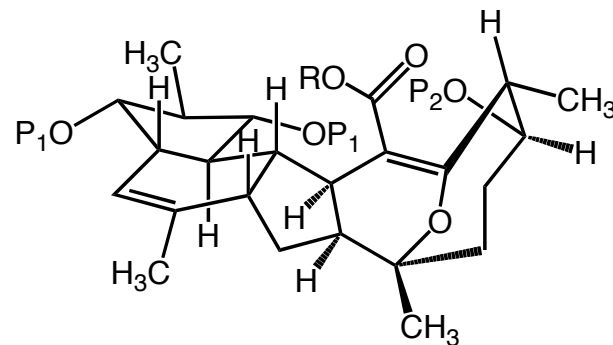
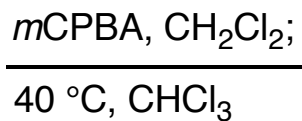
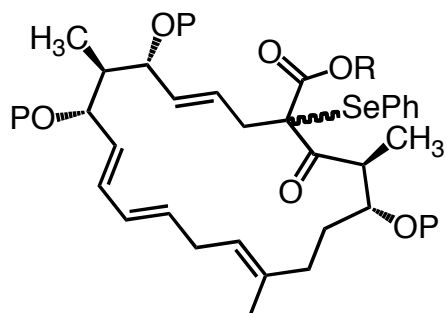
Nicolaou, K. C., *J. Amer. Chem. Soc.*, **1982**, 5555

**3 intermediates**



Johnson, W. S., *J. Amer. Chem. Soc.*, **1971**, 4330

**2 intermediates**



Sorensen, E. J., *J. Amer. Chem. Soc.*, **2002**, 4552

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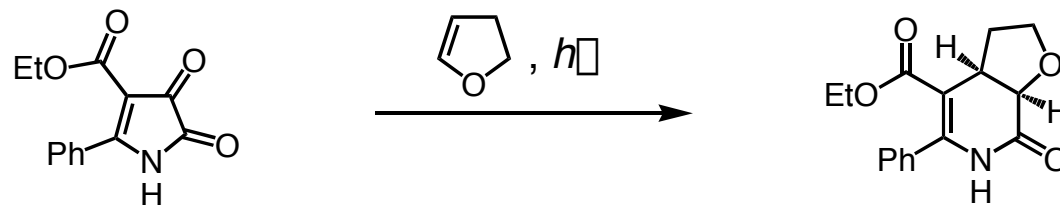
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**4 intermediates**

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# Dihydropyridone Synthesis

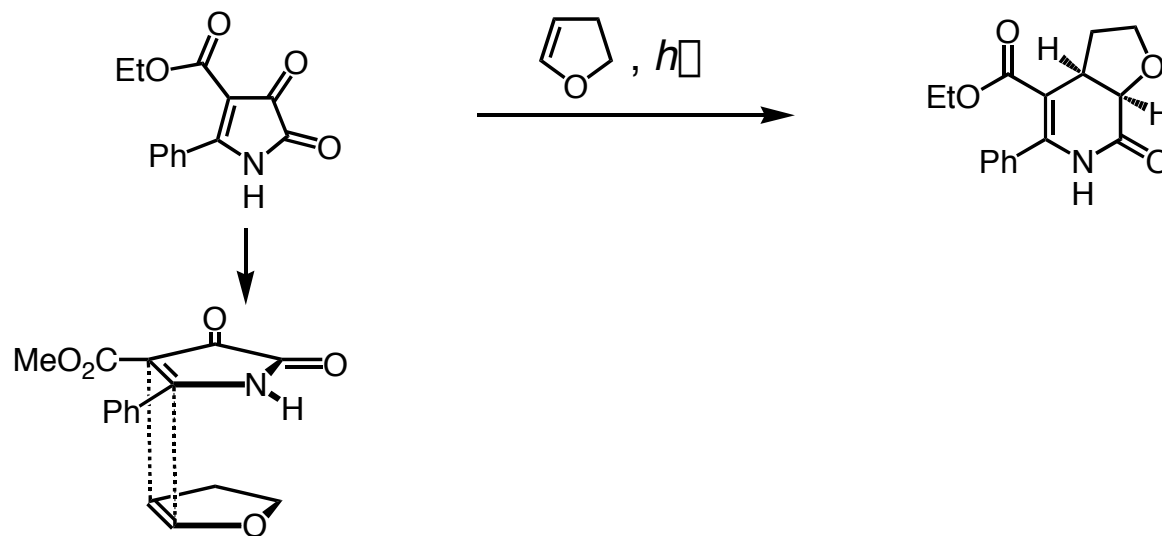
*Chem. Pharm. Bull.*, 1987, 4730



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# Dihydropyridone Synthesis

*Chem. Pharm. Bull.*, 1987, 4730

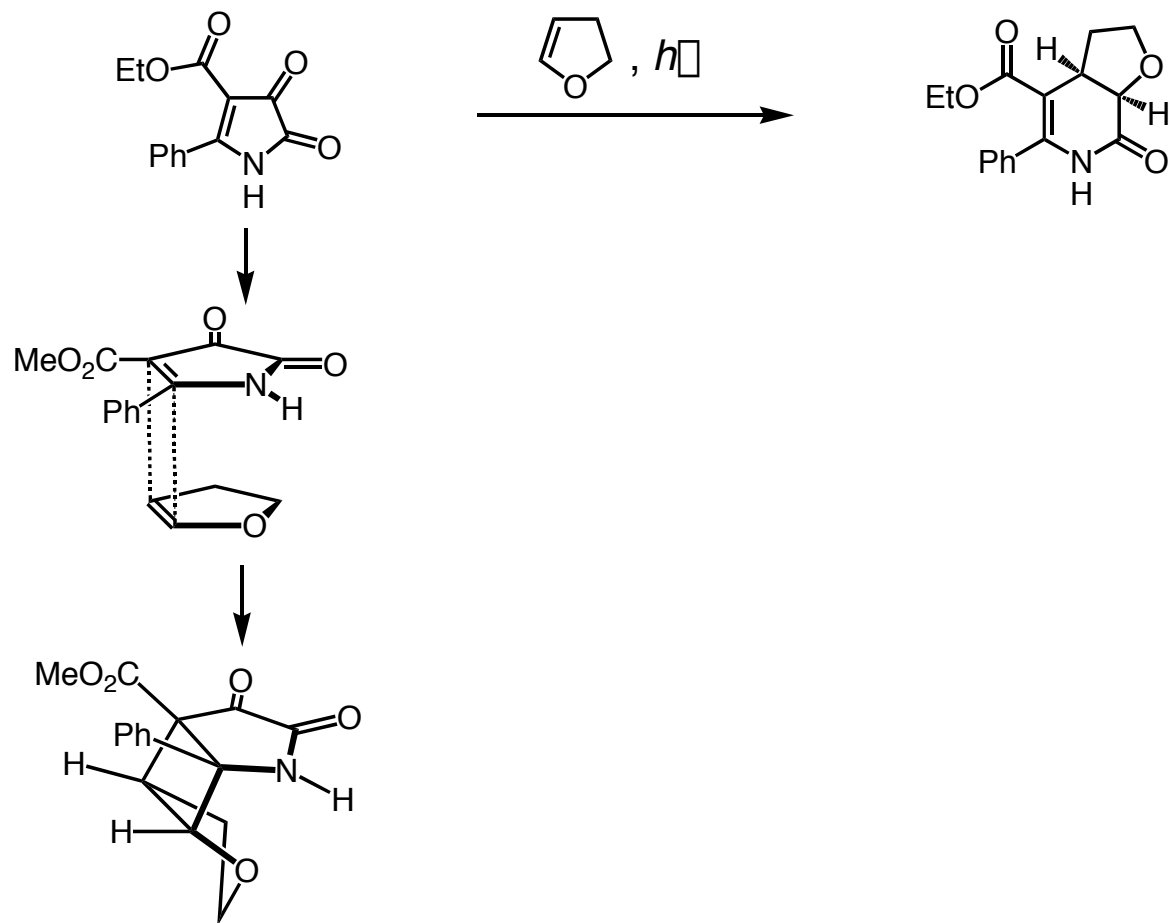




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# Dihydropyridone Synthesis

*Chem. Pharm. Bull.*, 1987, 4730

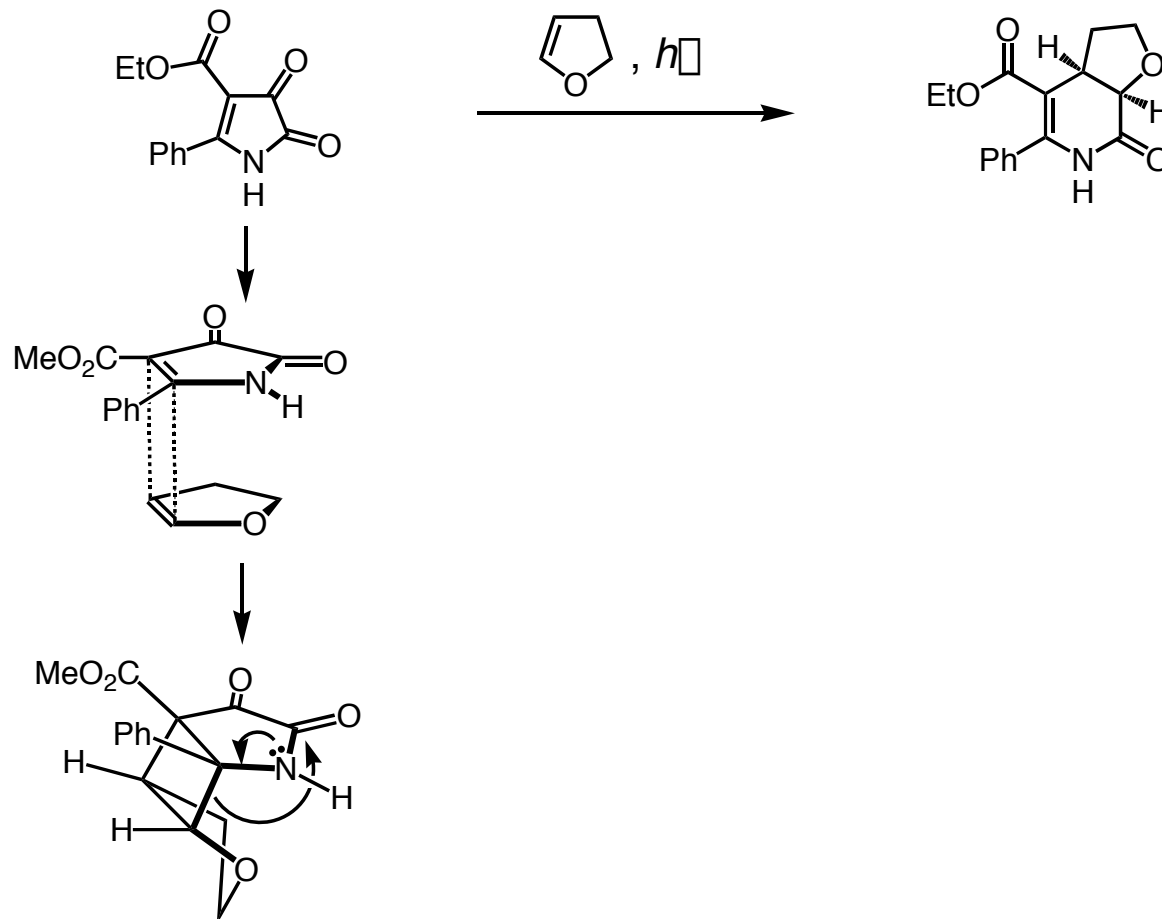


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# Dihydropyridone Synthesis

*Chem. Pharm. Bull.*, 1987, 4730

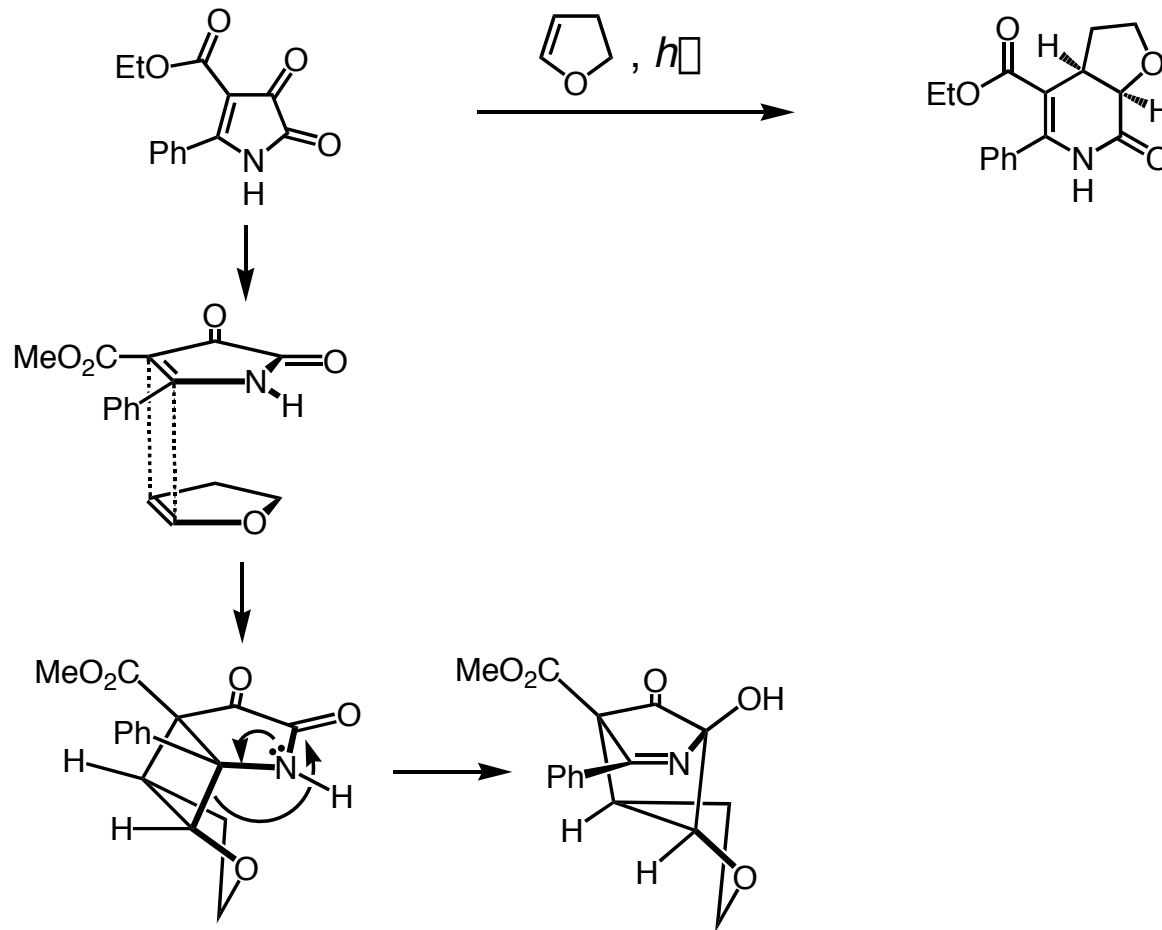


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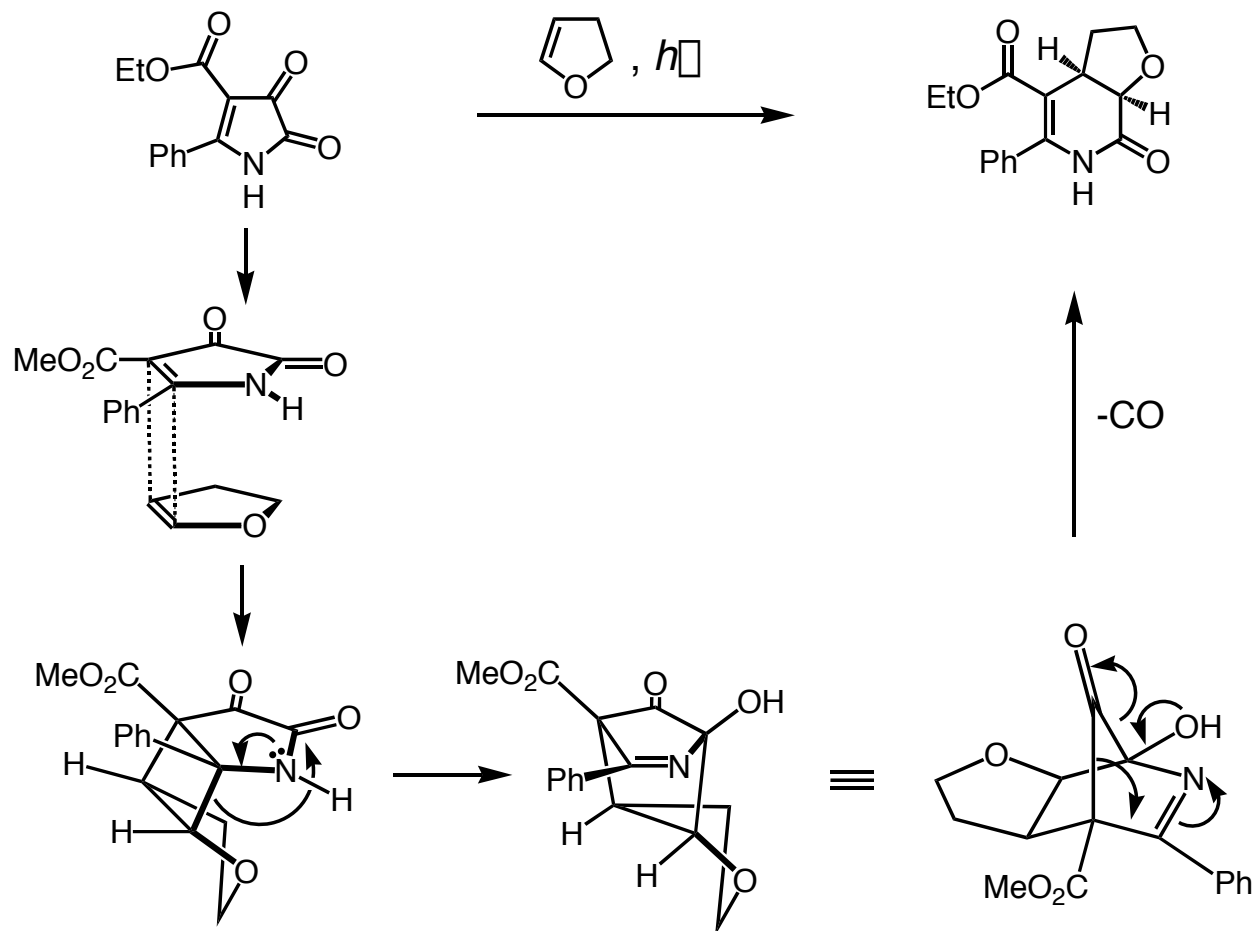
# Dihydropyridone Synthesis

*Chem. Pharm. Bull.*, 1987, 4730



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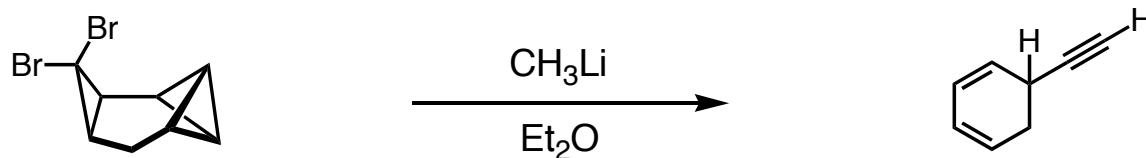
*Chem. Pharm. Bull.*, 1987, 4730



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# Degredation to a Cyclohexadiene

*Angew. Chem. Int. Ed.*, 1975, 765.

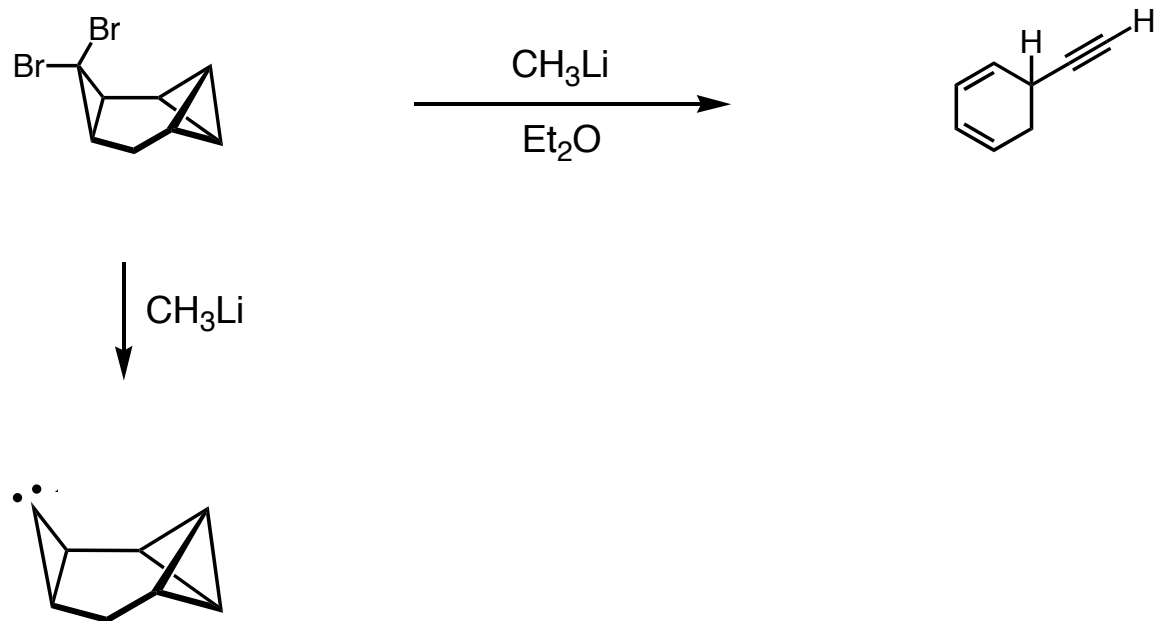


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*Angew. Chem. Int. Ed.*, 1975, 765.

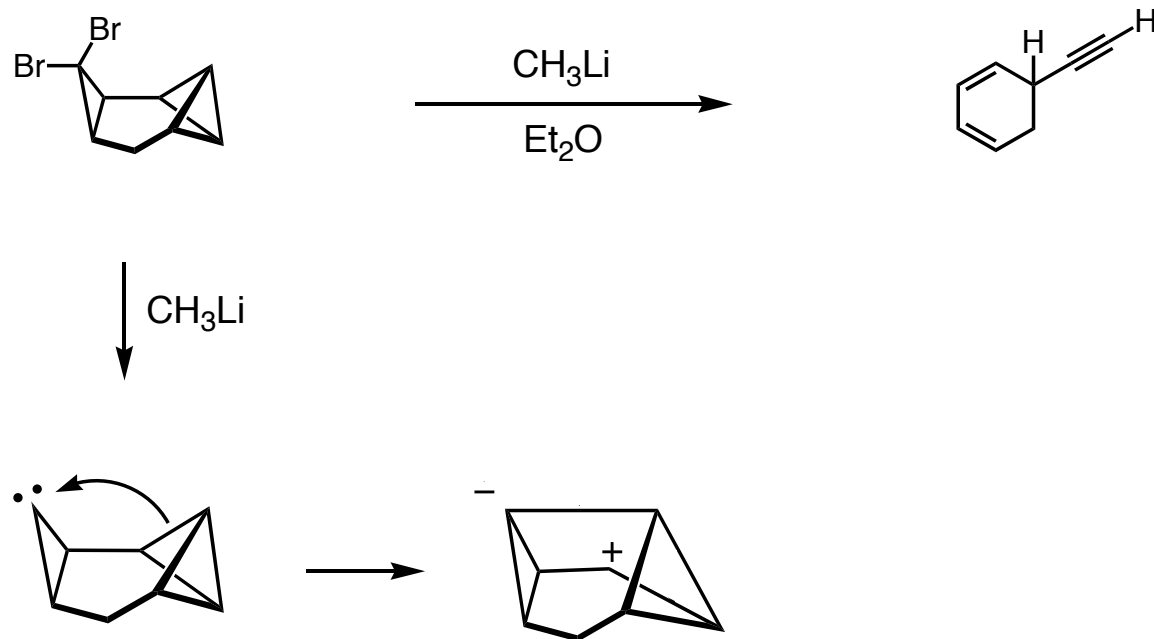


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*Angew. Chem. Int. Ed.*, 1975, 765.

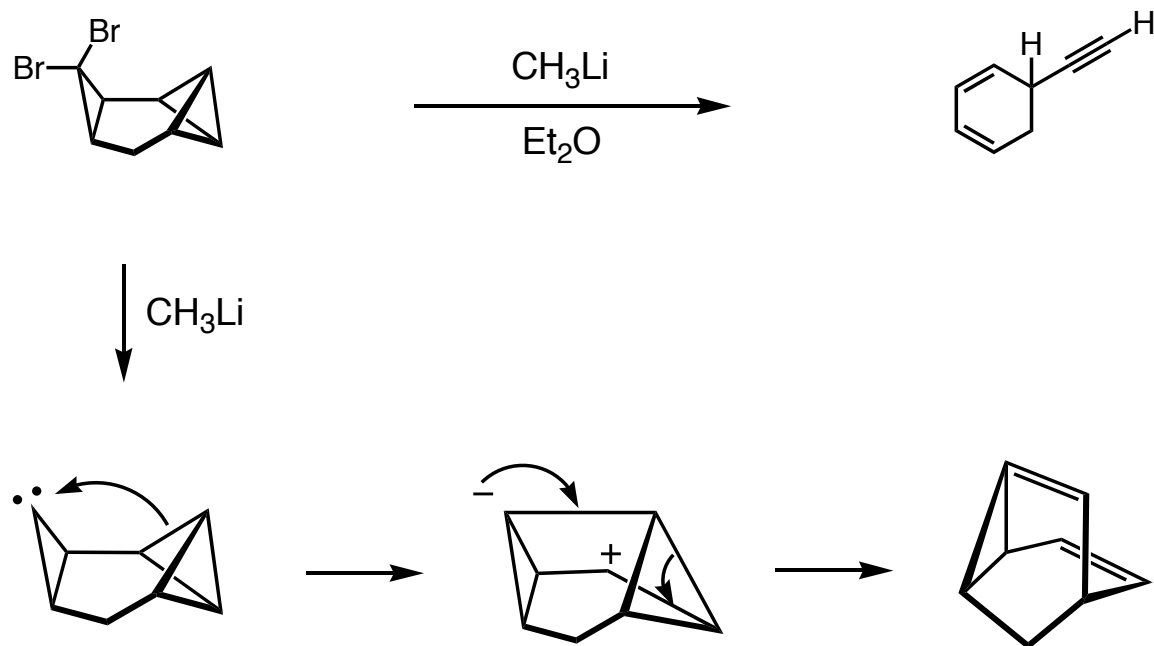


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*Angew. Chem. Int. Ed.*, 1975, 765.



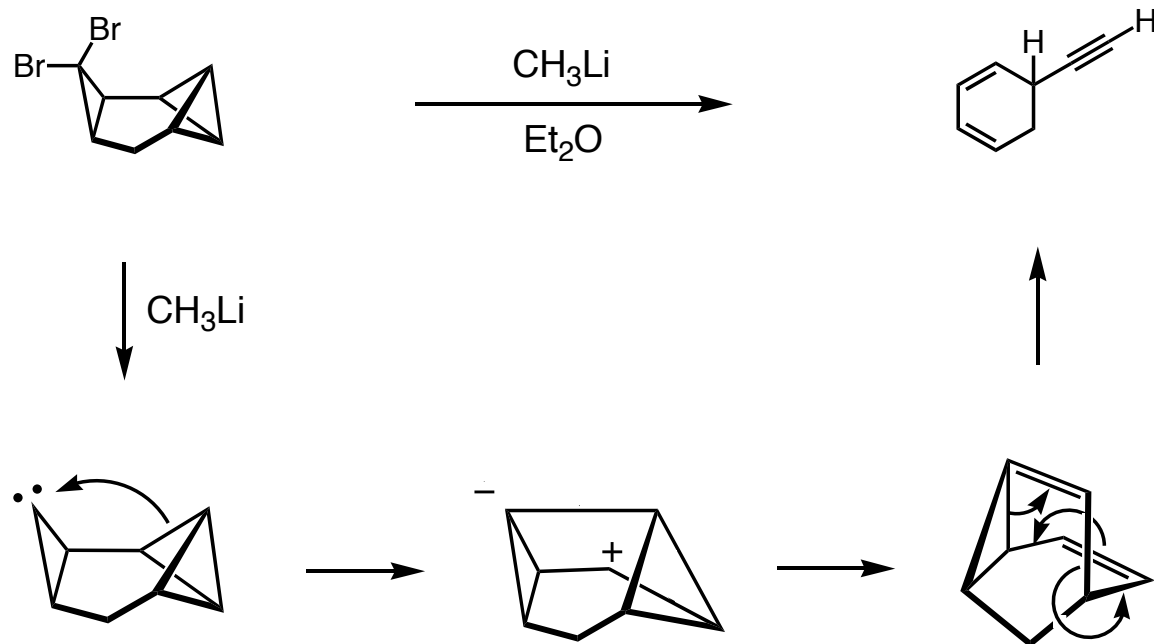


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*Angew. Chem. Int. Ed.*, 1975, 765.



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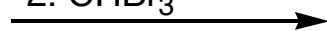
# Starting Material?

*Angew. Chem. Intern. Ed.*, 1975, 496



1.  $\text{CH}_2\text{I}_2$ , Zn/Cu

2.  $\text{CHBr}_3$



3. MeLi,  $\text{Et}_2\text{O}$

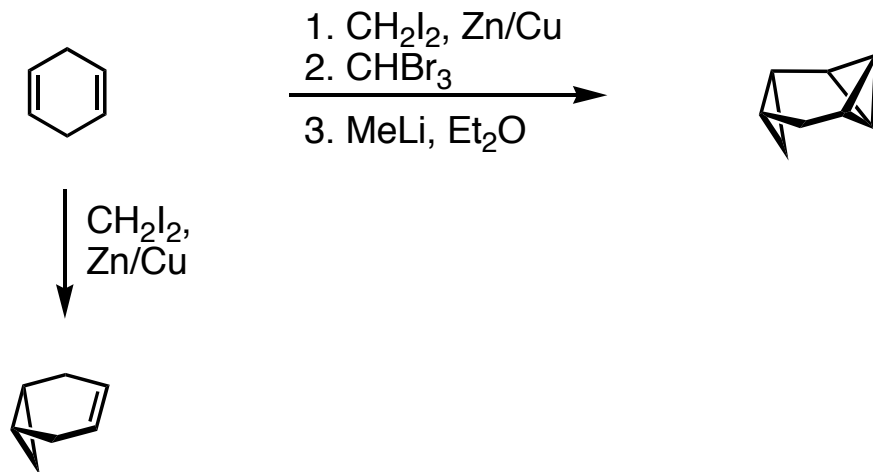


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*Angew. Chem. Intern. Ed.*, 1975, 496

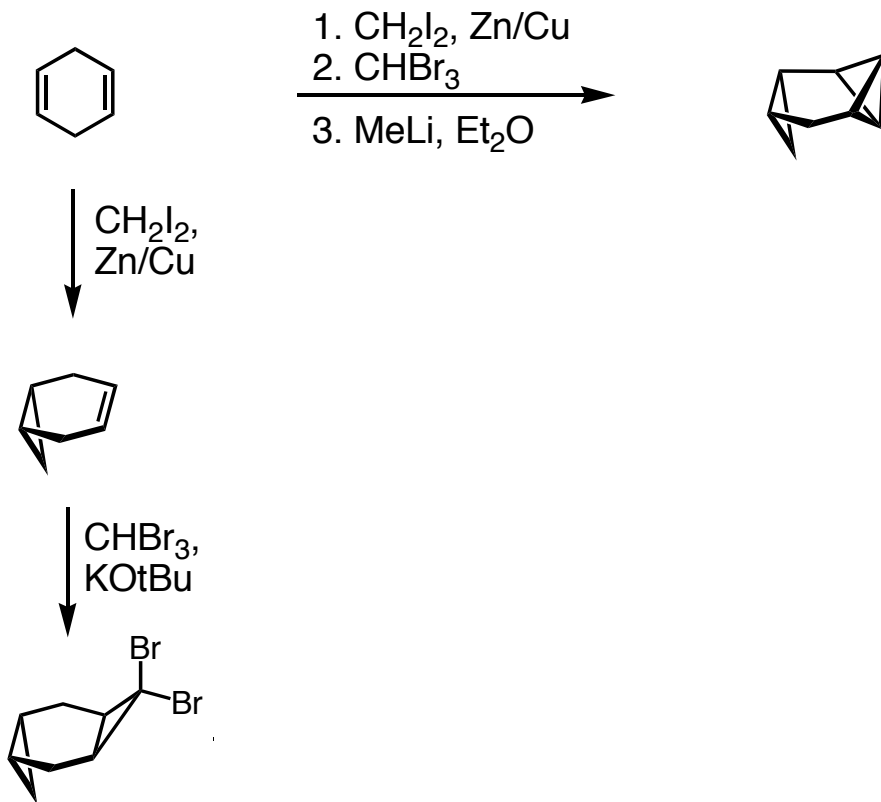


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*Angew. Chem. Intern. Ed.*, 1975, 496

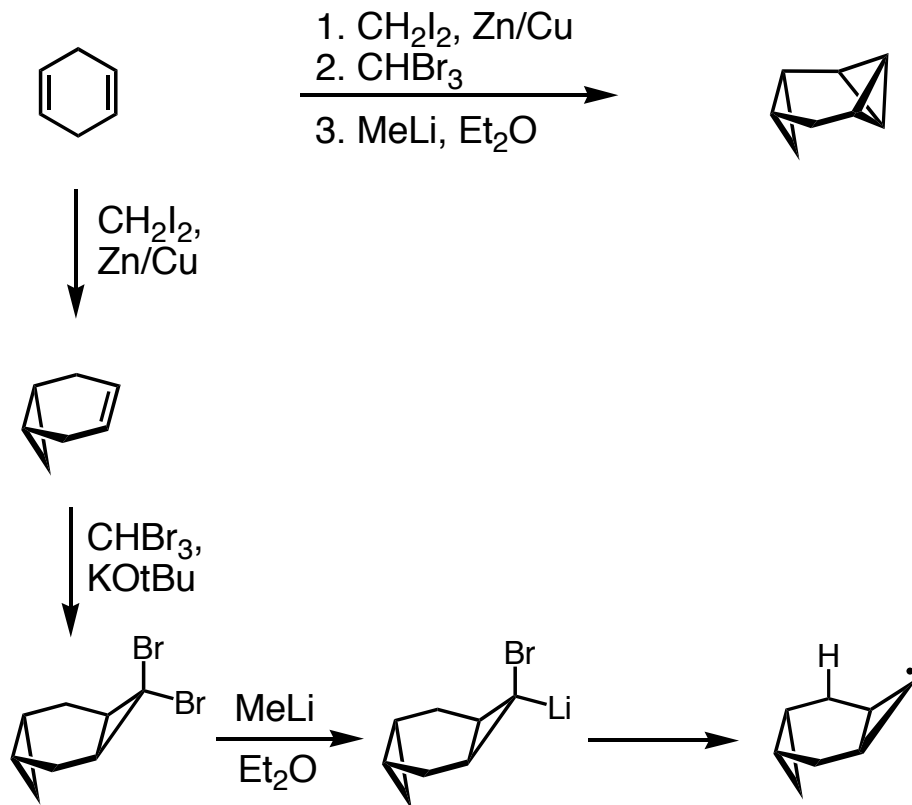


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*Angew. Chem. Intern. Ed.*, 1975, 496

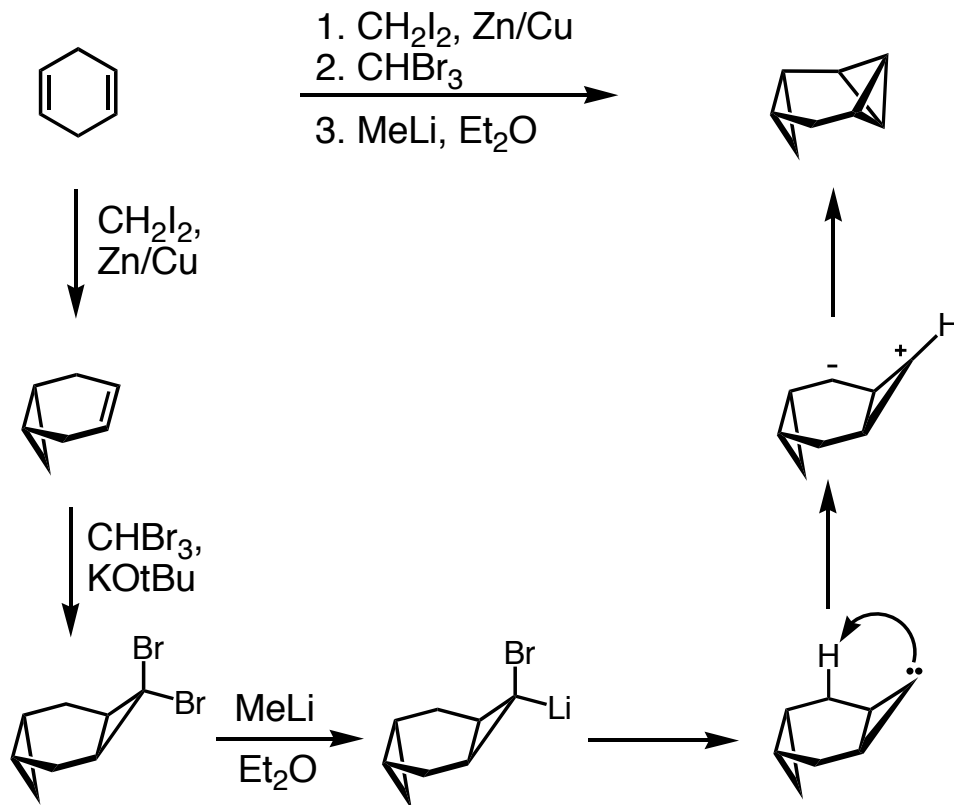


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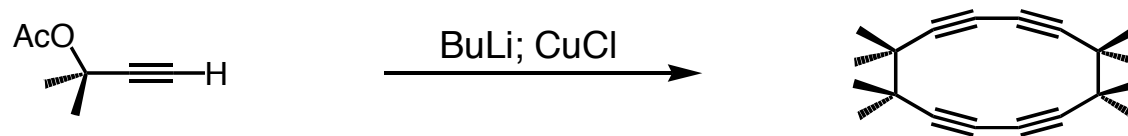
*Angew. Chem. Intern. Ed.*, 1975, 496



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# Synthesis of a Tetrayne

*Tetrahedron Lett.*, 1976, 2663

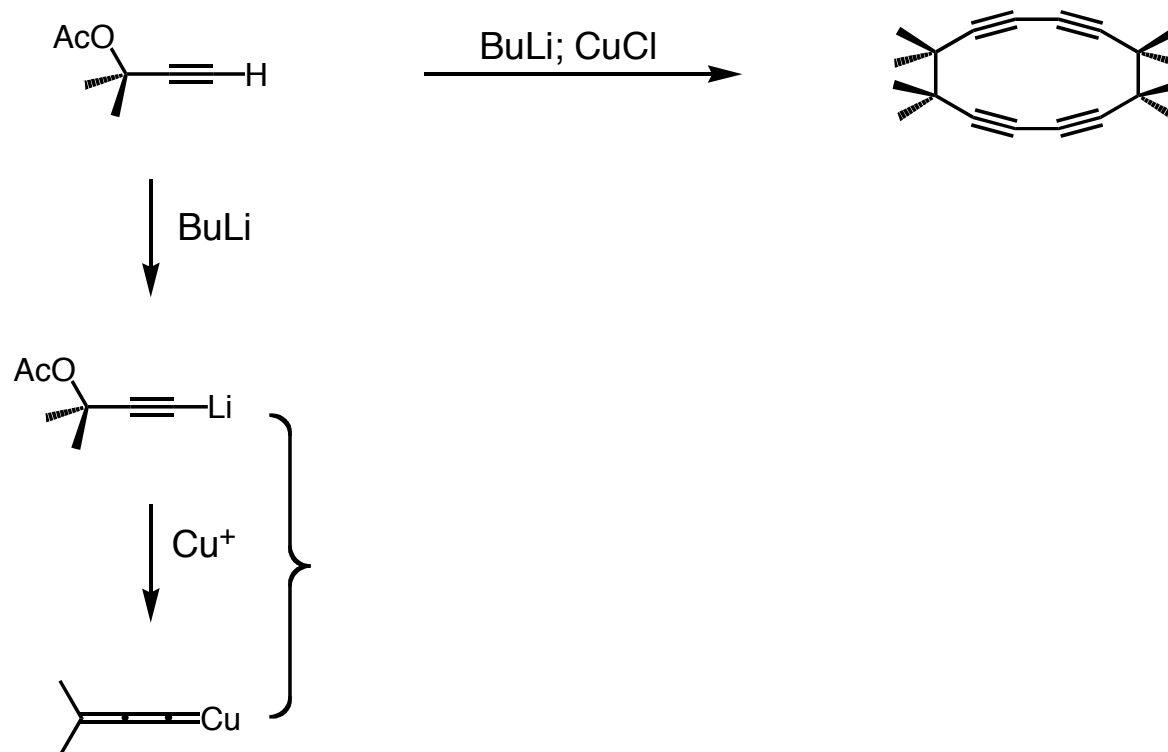


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*Tetrahedron Lett.*, 1976, 2663



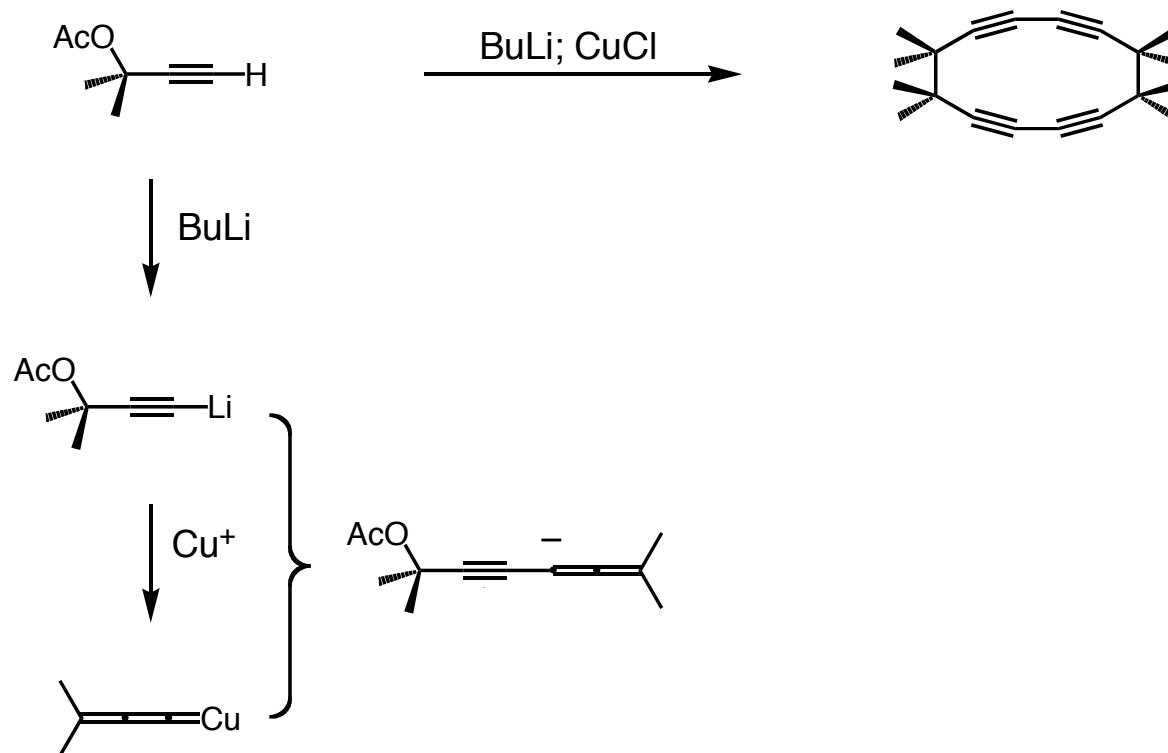


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*Tetrahedron Lett.*, 1976, 2663

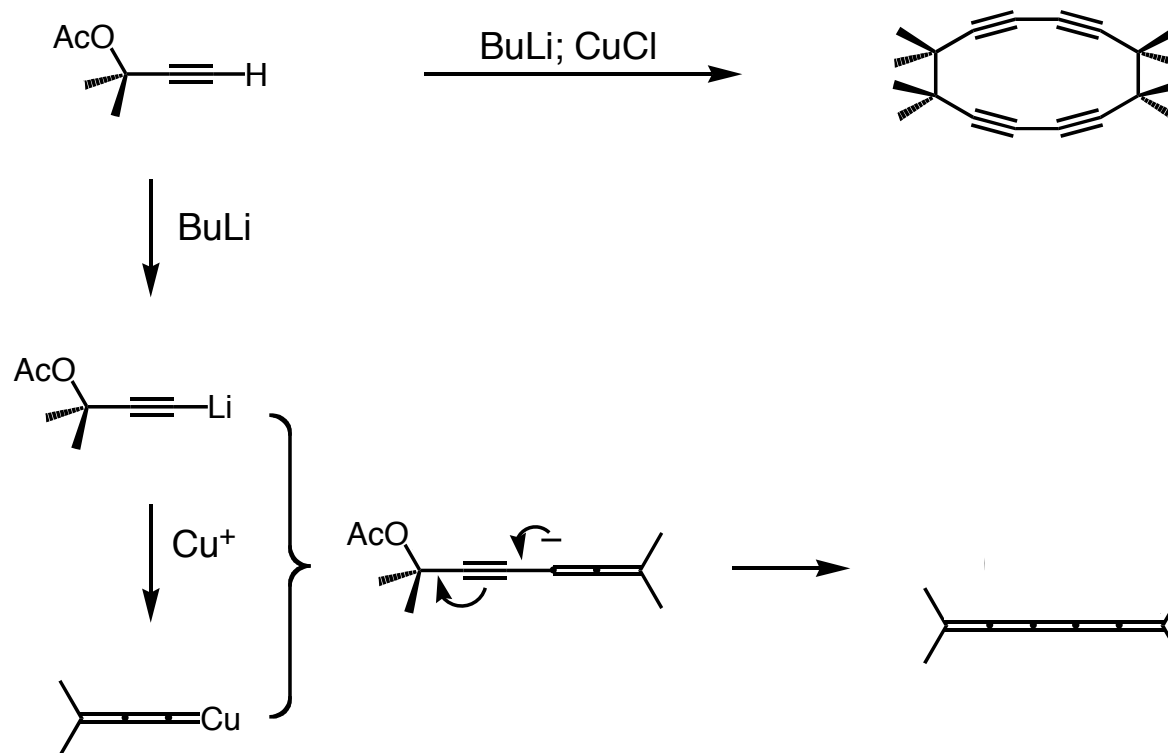


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*Tetrahedron Lett.*, 1976, 2663

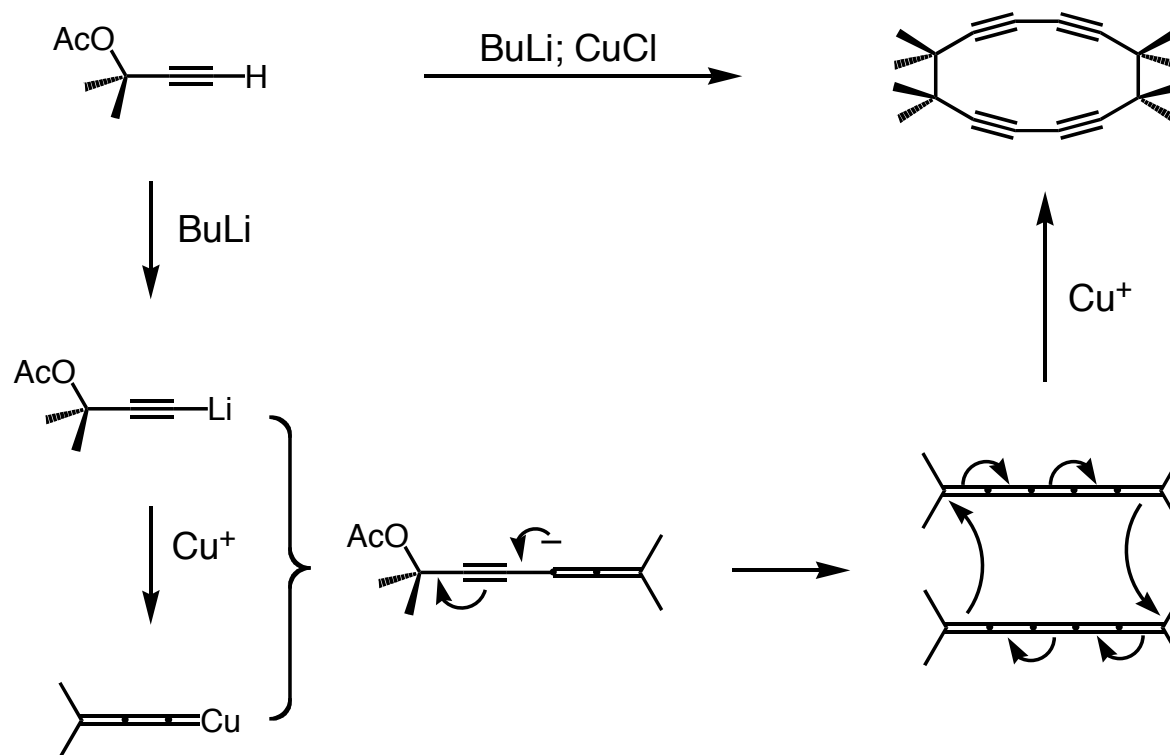


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*Tetrahedron Lett.*, 1976, 2663

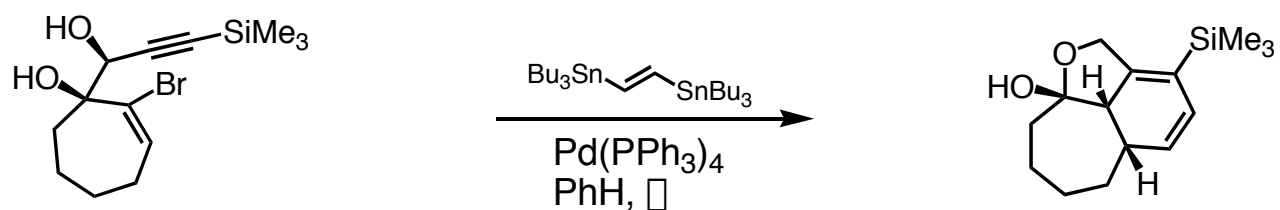


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# Complex Polycycle

*J. Am. Chem. Soc.*, **2001**, 12107

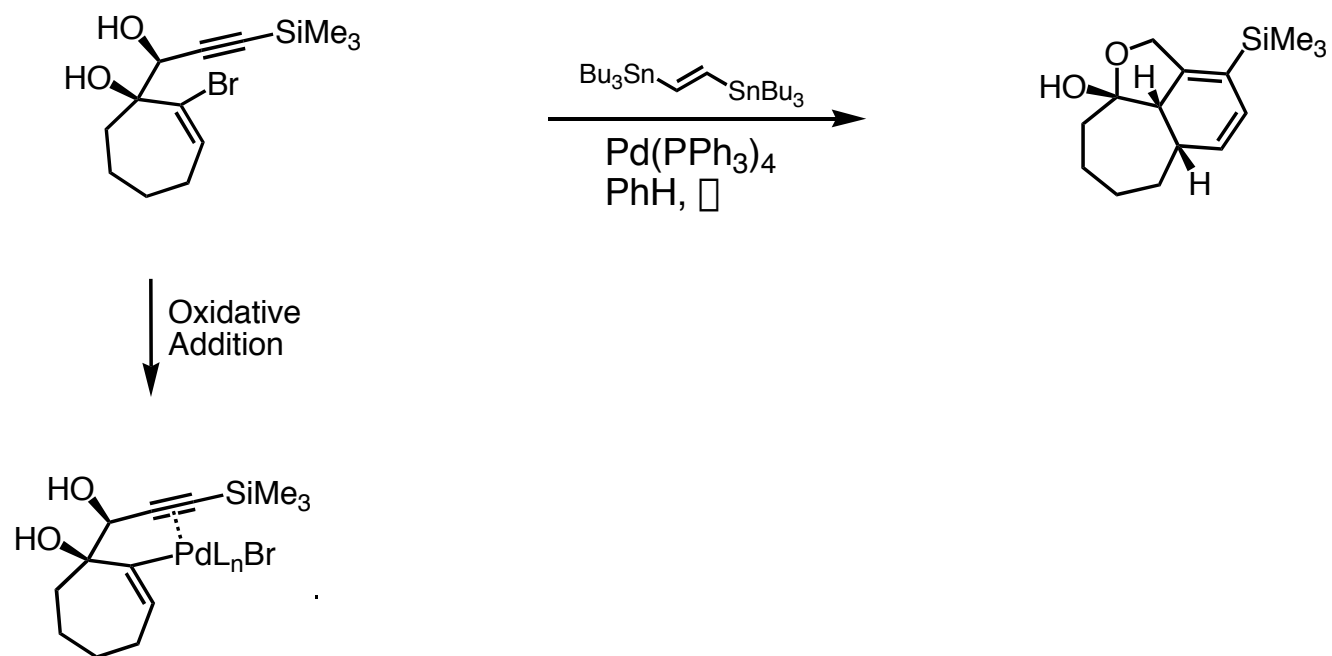


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*J. Am. Chem. Soc.*, **2001**, 12107

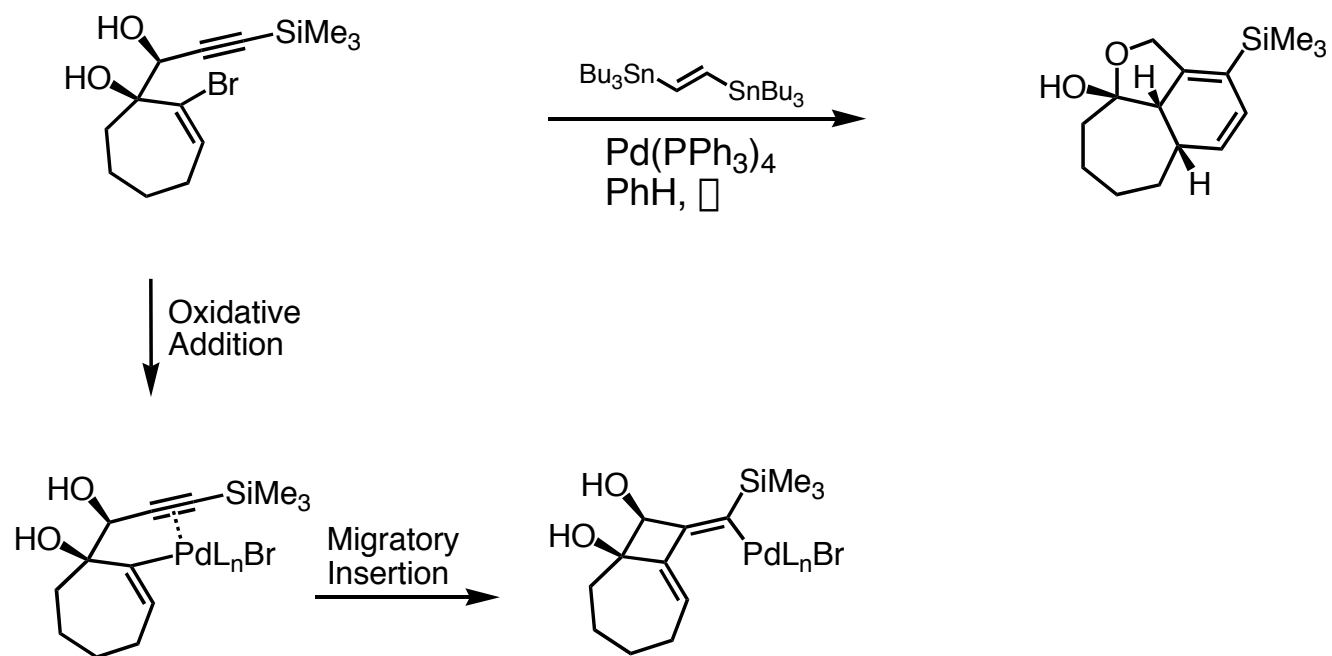


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*J. Am. Chem. Soc.*, **2001**, 12107

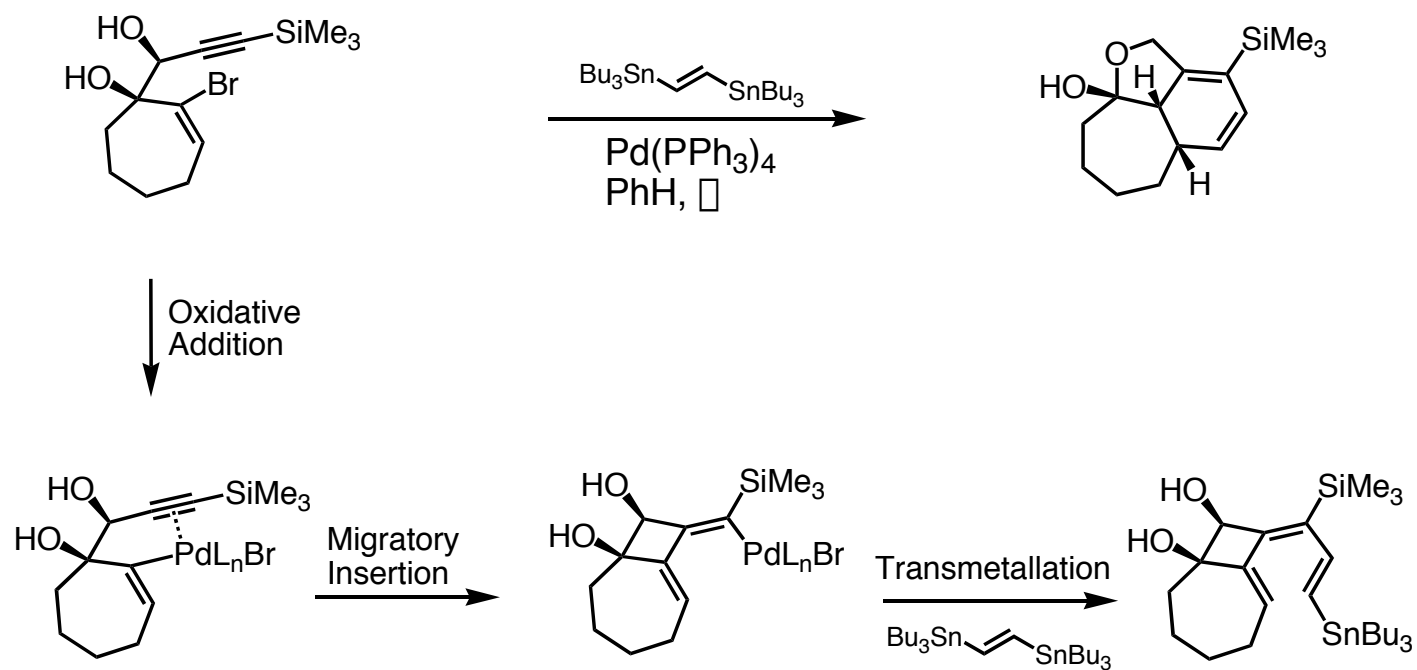


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# Complex Polycycle

*J. Am. Chem. Soc.*, **2001**, 12107

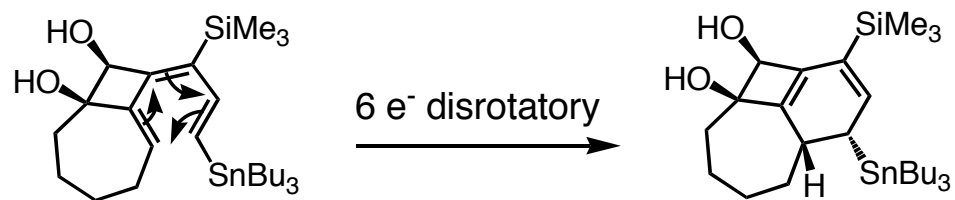


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# Complex Polycycle Cont...

*J. Am. Chem. Soc.*, 2001, 12107

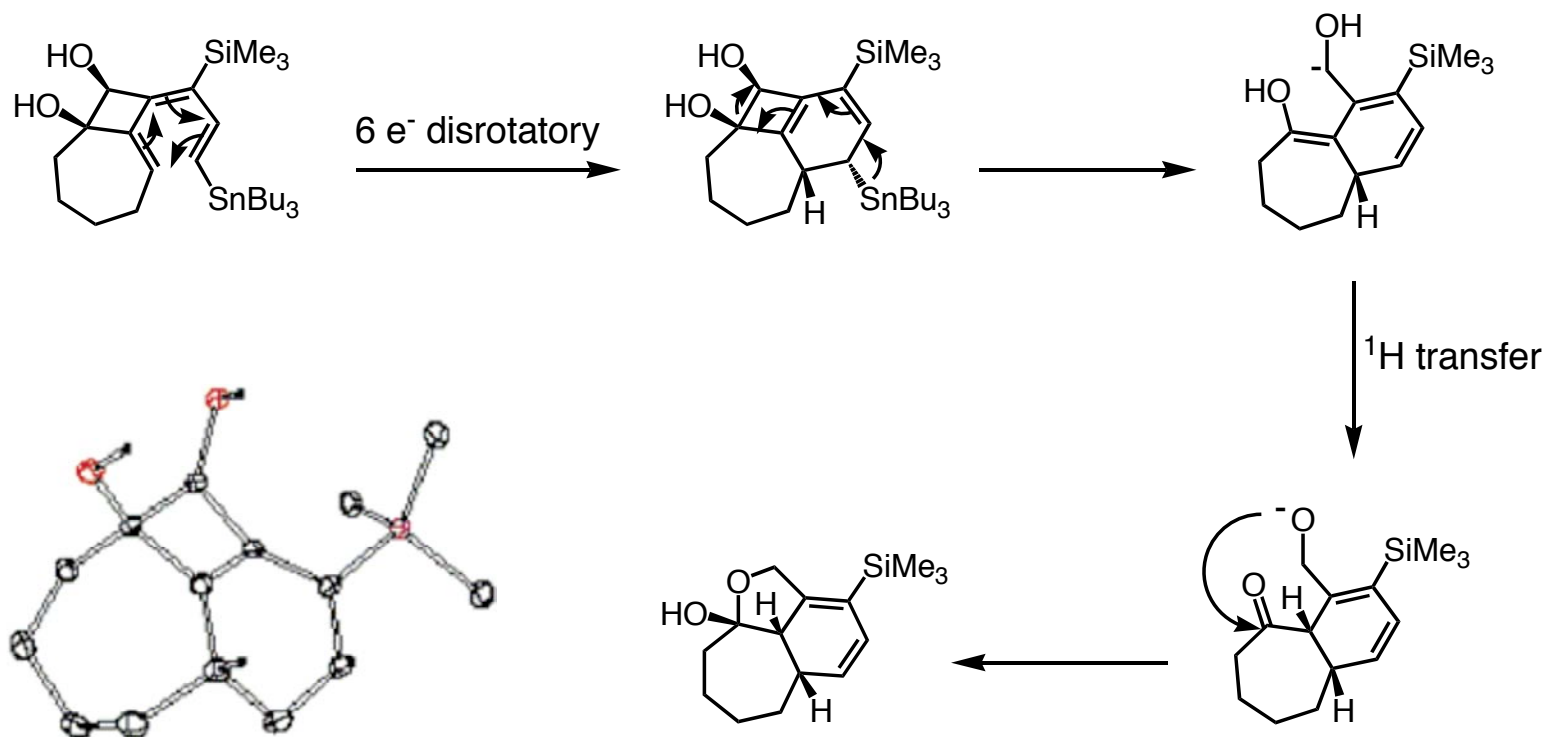




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# Complex Polycycle Cont...

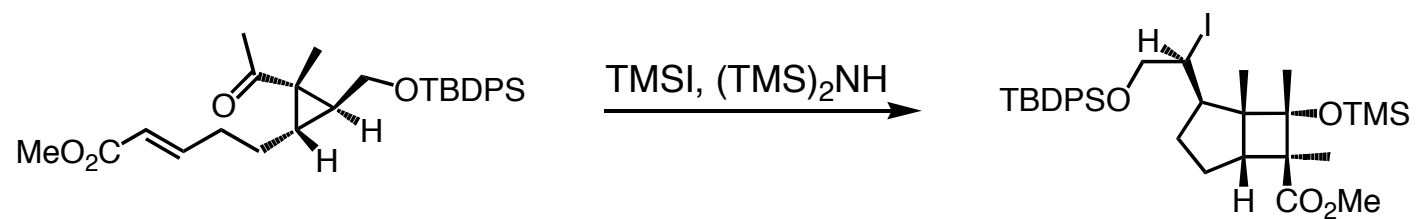
*J. Am. Chem. Soc.*, 2001, 12107



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# A [3.2.0] Bicycle

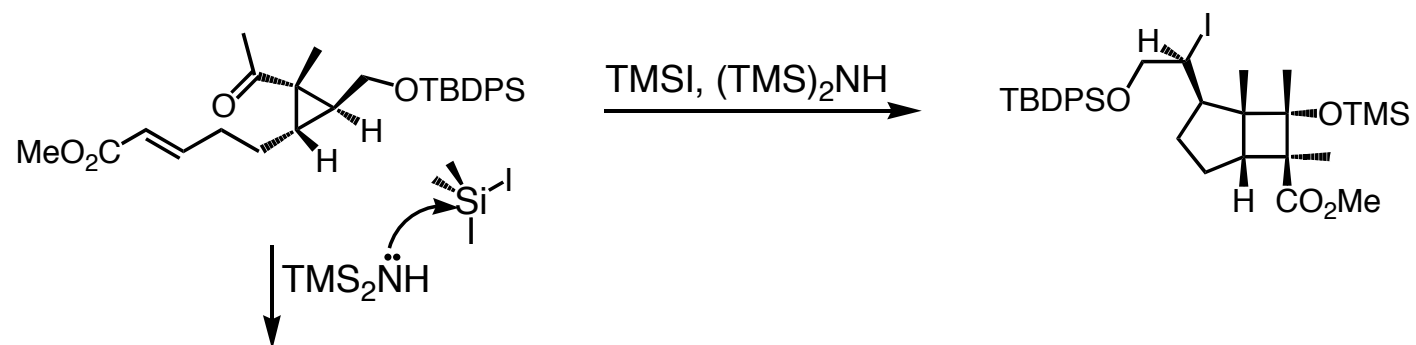
*J. Org. Chem.*, **1994**, 8092



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# A [3.2.0] Bicycle

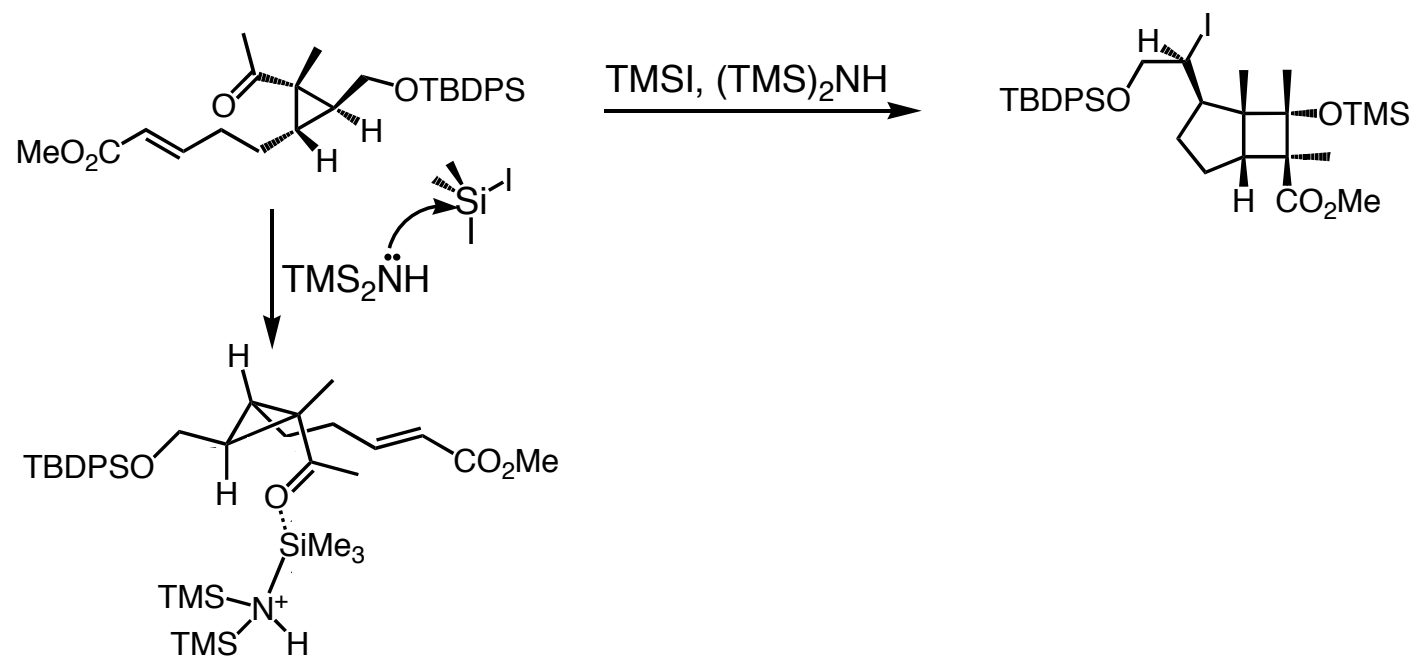
*J. Org. Chem.*, 1994, 8092



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# A [3.2.0] Bicycle

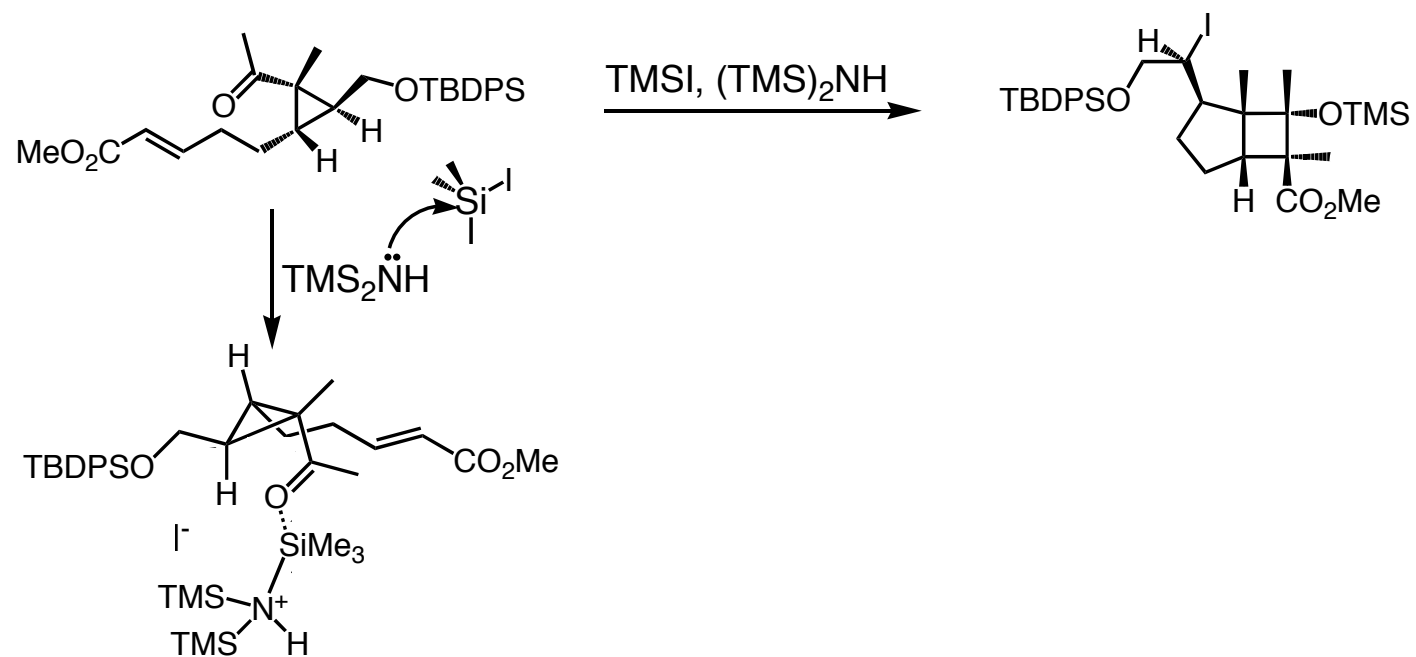
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# A [3.2.0] Bicycle

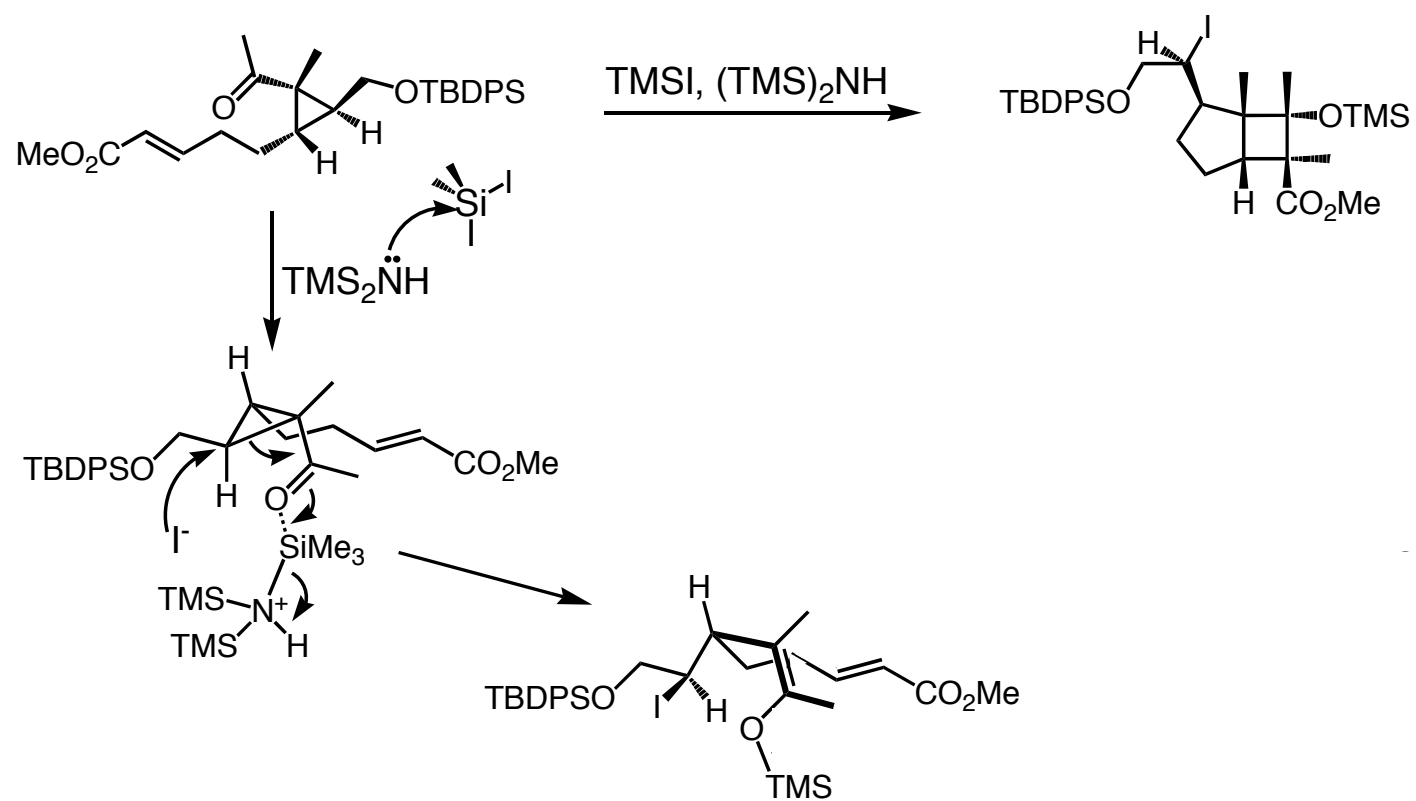
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*J. Org. Chem.*, 1994, 8092

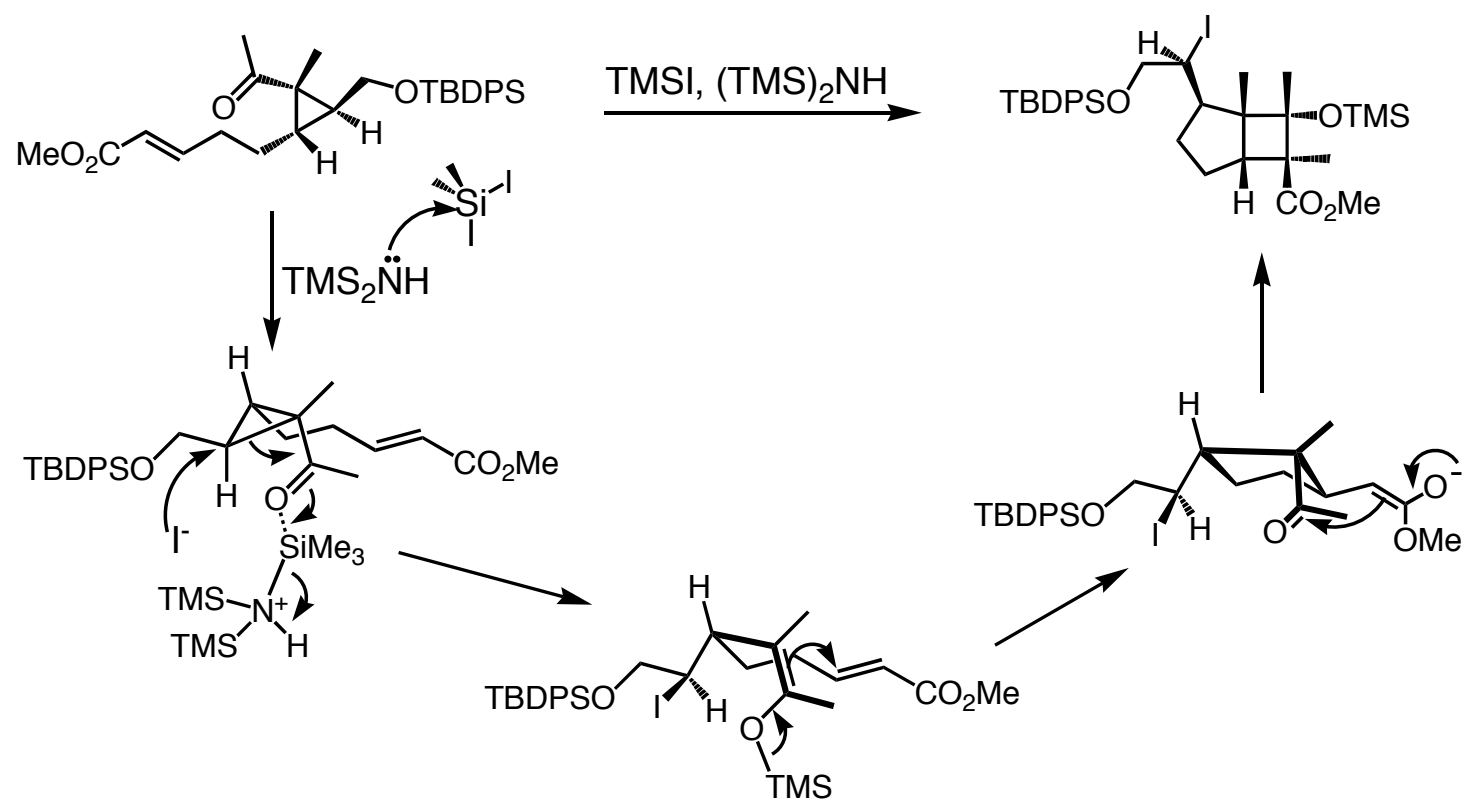


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# A [3.2.0] Bicycle

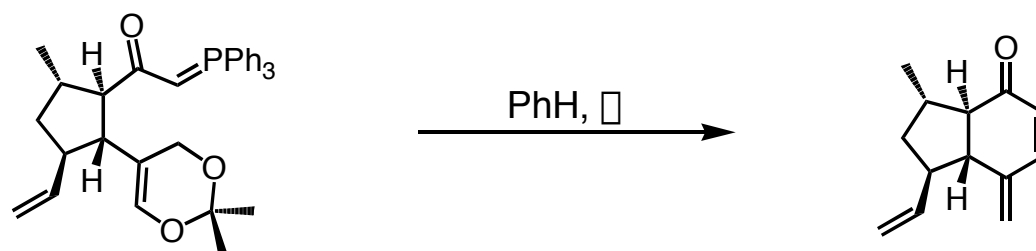
*J. Org. Chem.*, 1994, 8092



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# A Hydrindane

*Unpublished*



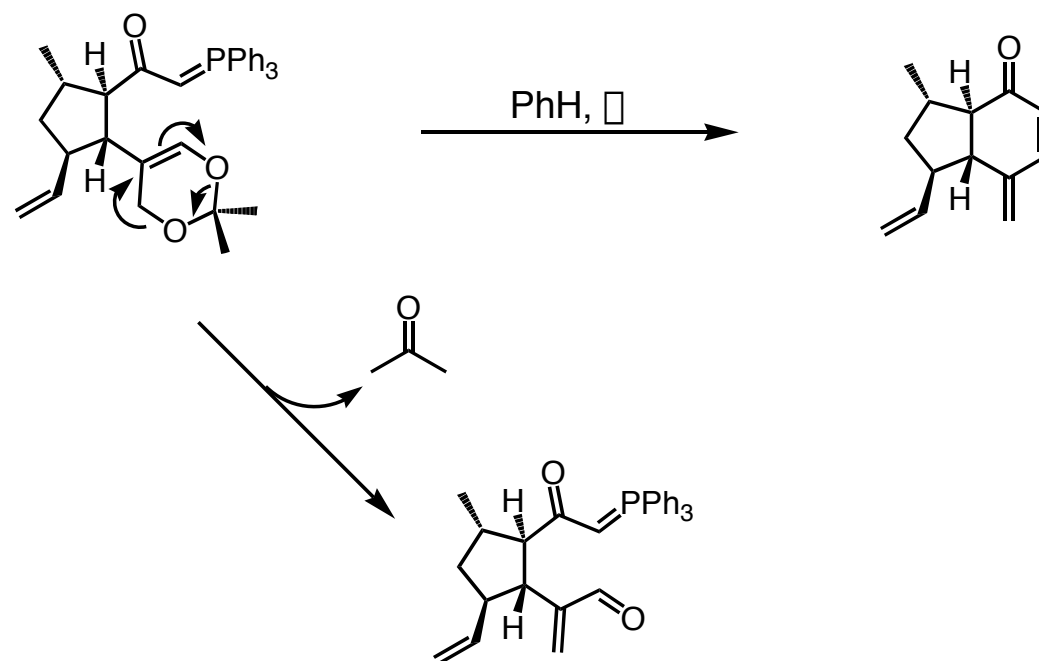


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# A Hydrindane

*Unpublished*

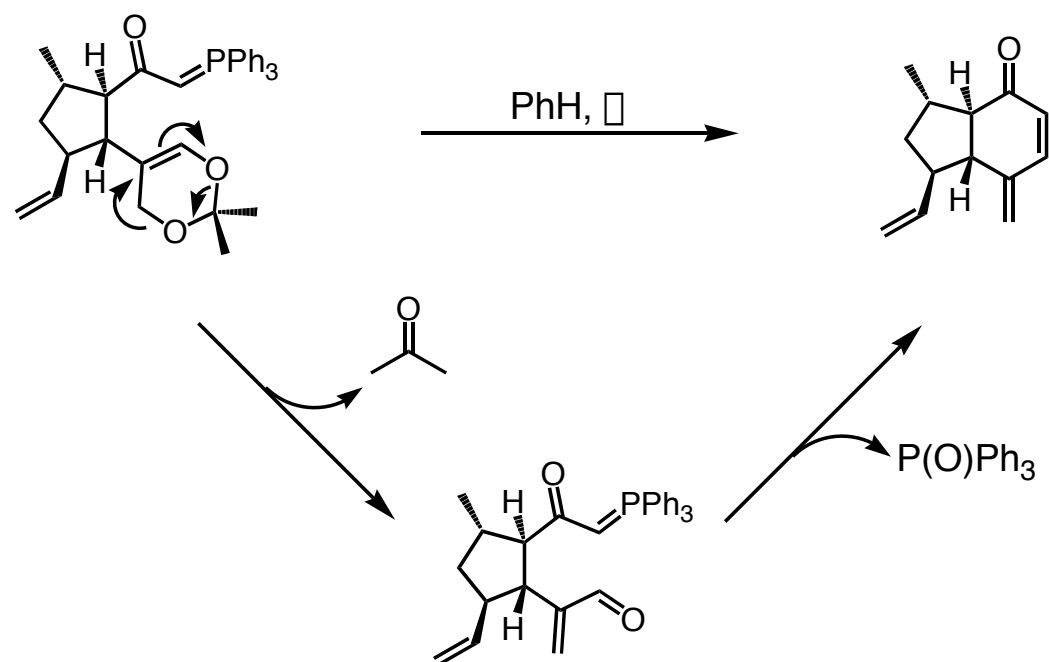


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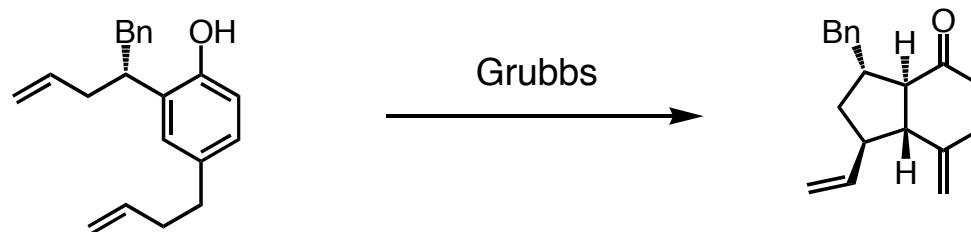
*Unpublished*



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# Another (the same) Hydrindane

Hoye, T., *Unpublished*

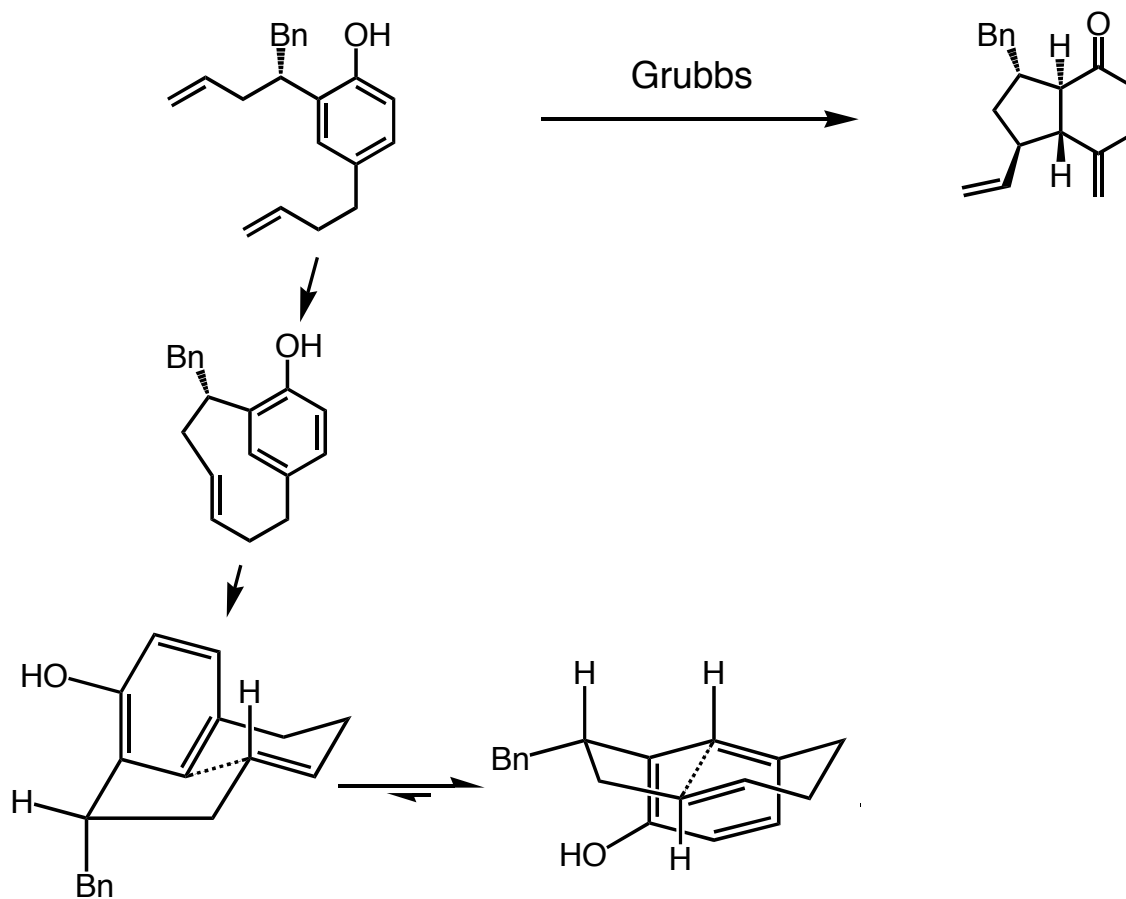


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Hoye, T., *Unpublished*

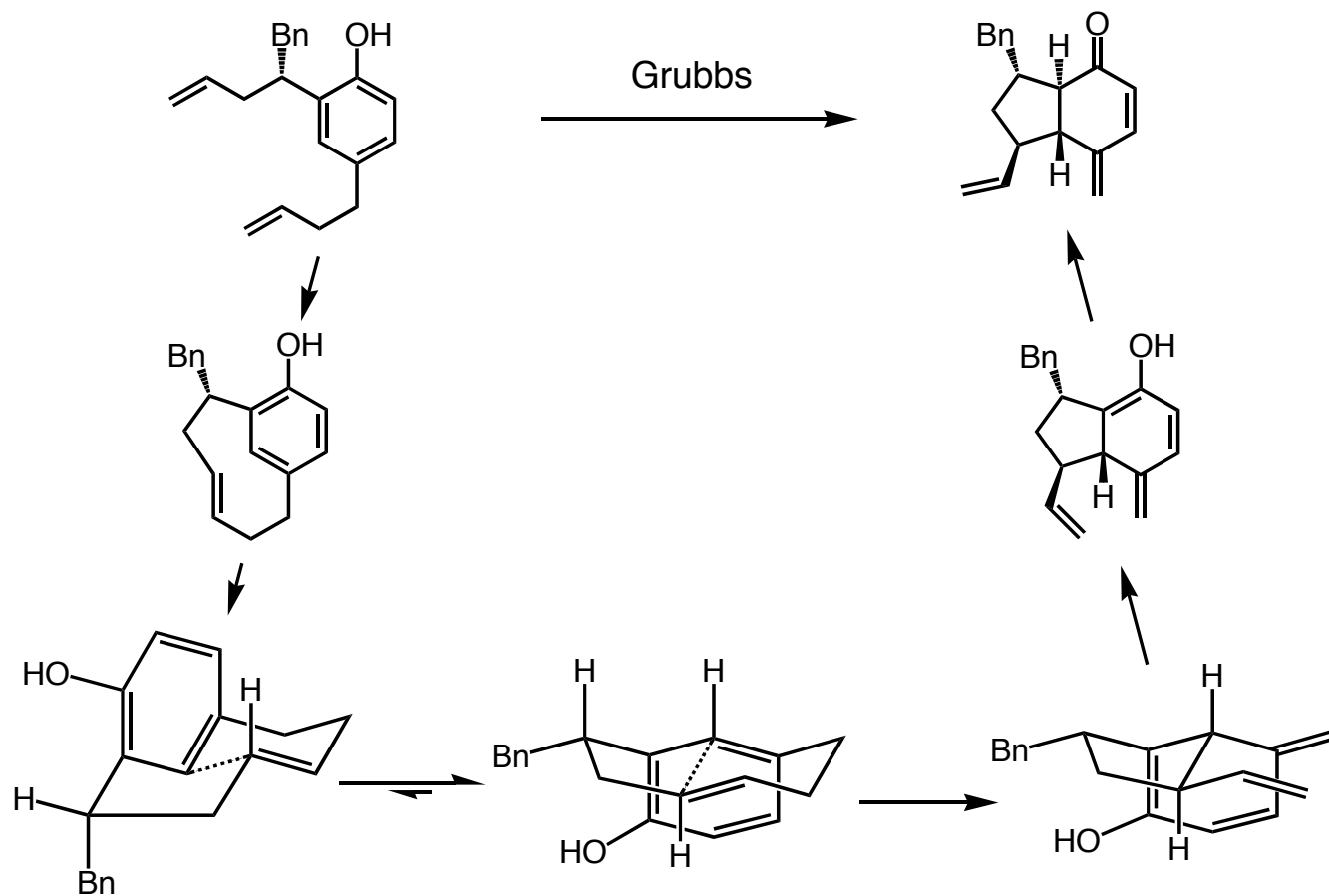


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Hoye, T., *Unpublished*



## Summary

