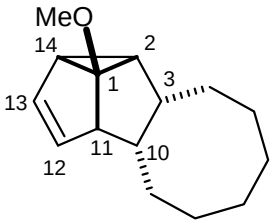
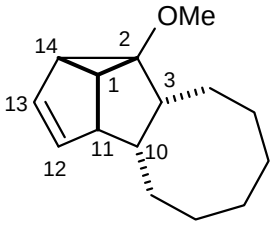
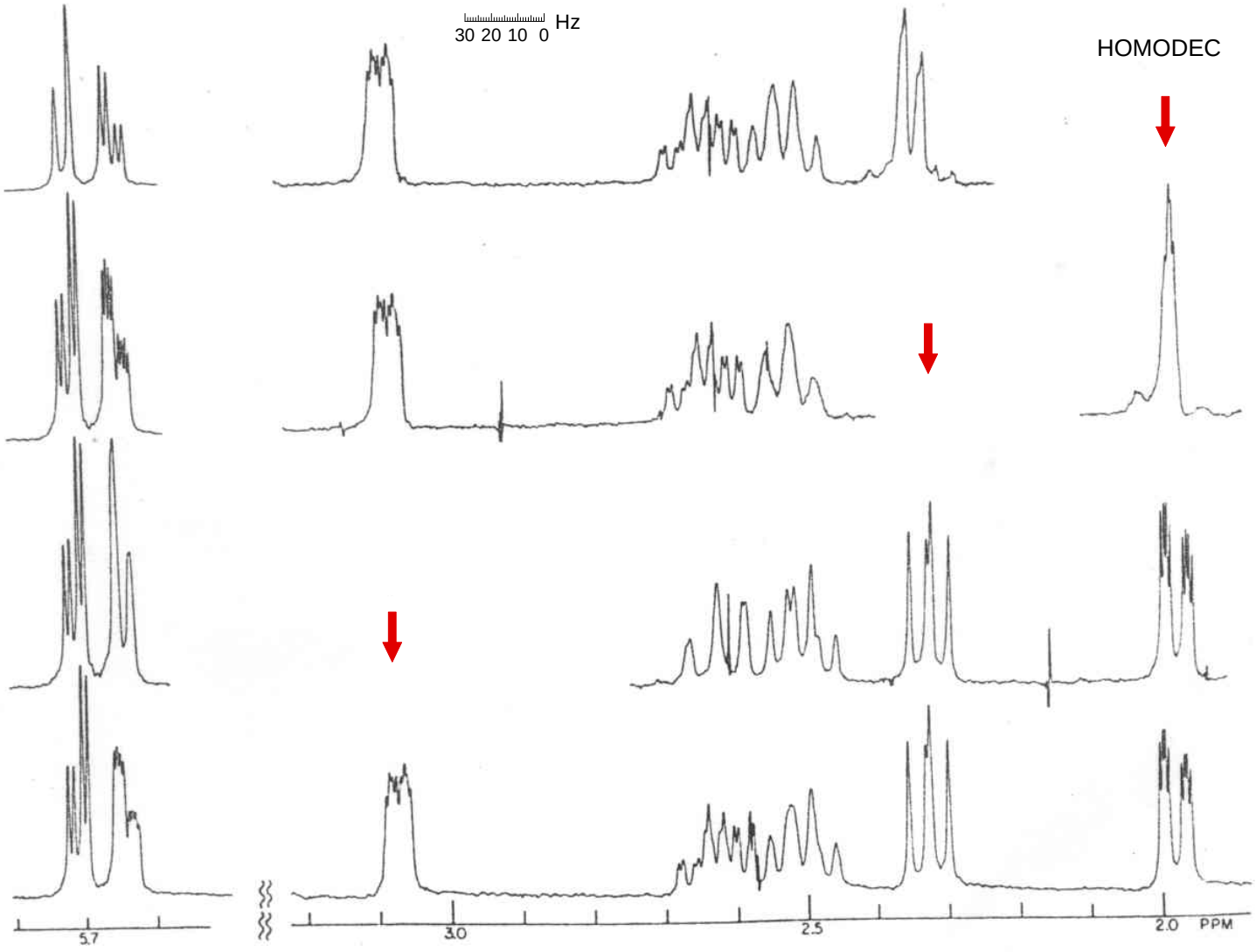
**Problem N-156** ($C_{15}H_{22}O$). The major photoaddition product of anisole and cyclooctene has been assigned to structure A and B by different groups. Assign the protons in the 270 MHz NMR spectrum below, showing whether A or B is the currect structure. The bottom spectrum shows two portions of the $^1$H NMR spectrum of the adduct. Upper plots show effects of decoupling at positions shown by arrows (Sheridan, Tet. Lett. **1982**, *23*, 267).




**A**




**B**




PLT pn-080-to-373.plt

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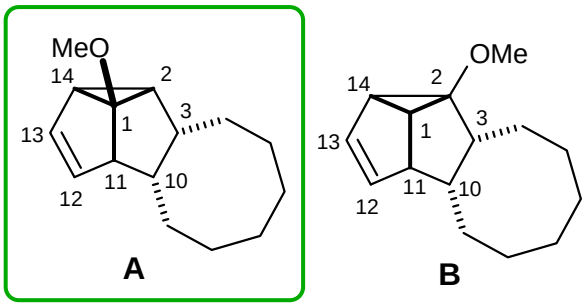
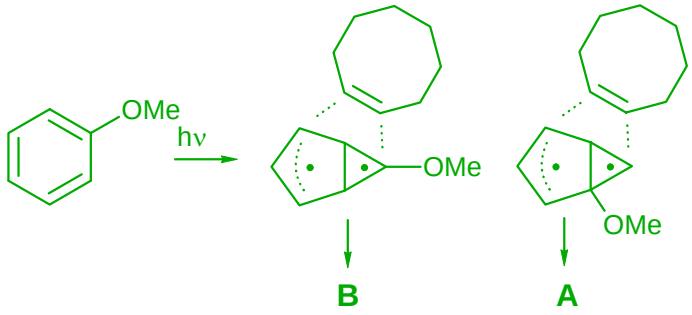


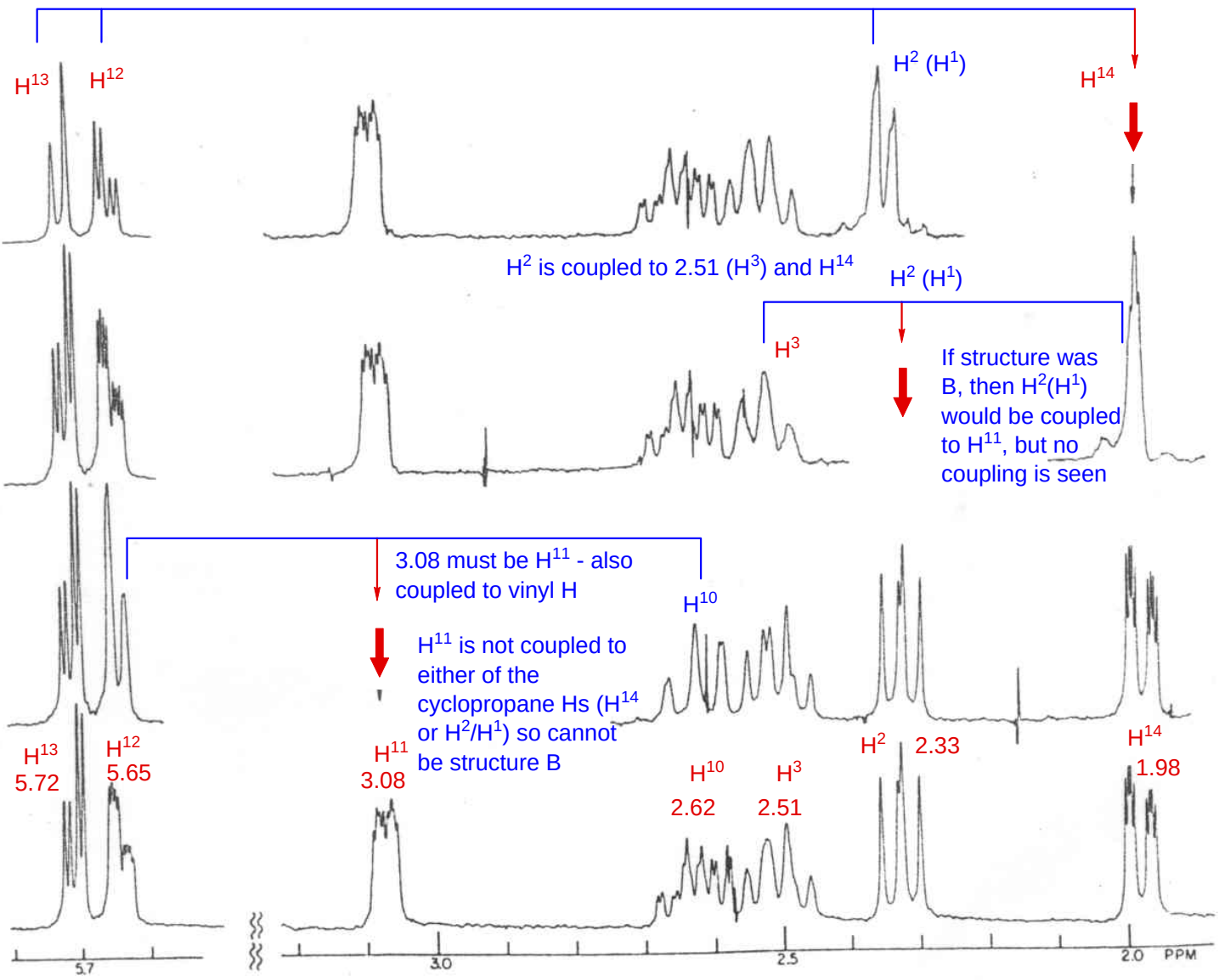

Expected **B** - OMe should stabilize the radical center, and this structure was initially reported

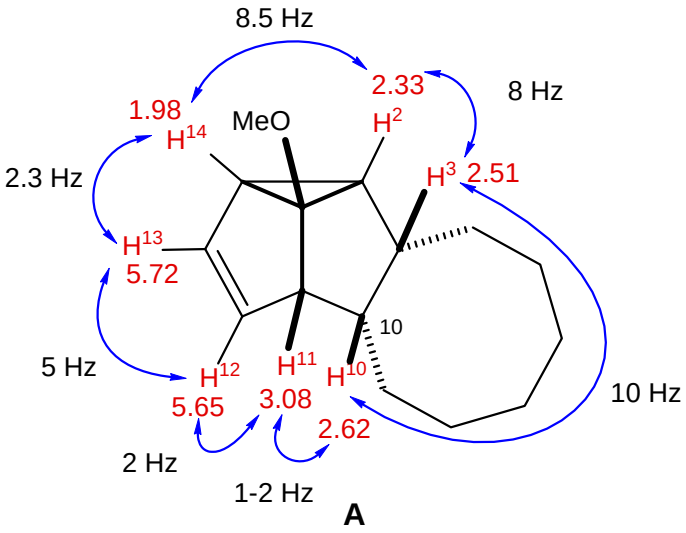
These are the vinyl protons. $H^{14}$ is coupled to both of them

Hz
30 20 10 0

2.33 is coupled to $H^{14}$, so must be $H^2$ if A is correct or $H^1$ if B is correct

1.98 must be $H^{14}$, since it is coupled to both $H^{12}$ and $H^{13}$ and is too far upfield to be $H^{11}$




8.5 Hz
1.98
H14
MeO
2.33
H2
8 Hz
2.3 Hz
H3 2.51
H13
5.72
10
5 Hz
H12
5.65
H11
3.08
H10
2.62
10 Hz
2 Hz
1-2 Hz

**A**