5. Based on these facts, and on ultraviolet, infrared and nuclear-magnetic-resonance spectral data, the most probable structure for pencolide is 2-citraconimidobut-2-enoic-acid.

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APPENDIX

The Proton-Magnetic-Resonance Spectrum of Pencolide

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The spectrum of pencolide is simple, consisting of two doublets, each representing three protons, and two quartets, each accounting for one proton. The positions (Jackman, 1959) of the two doublets, τ 8.18 and 7.87 p.p.m., with coupling constants of 7.5 and 2 cyc./sec. respectively, are consistent with there being present two methyl groups each on a double bond. The other two protons, τ 3.51 (J 2 cyc./sec.) and 2.54 p.p.m. (J 7.5 cyc./sec.) must be vinylic; further, from the splitting pattern and the identity of the coupling constants, the methyl group, τ 8.18 p.p.m., must be on the same double bond as the vinyl proton, τ 2.54 p.p.m., and from the magnitude of the coupling constant (Jackman, 1959) they must be on the same carbon atom, i.e. an ethylidene group (I). The smaller coupling constant in the other case best agrees with

allylic coupling across the double bond (II). This accounts for eight of the nine protons present; the ninth, present as an hydroxyl group, was not observed in the spectrum down to τ 1.7 p.p.m.

We thank Mr R. G. Foster, B.Sc., for determining the spectrum on a Varian A-60 Spectrometer with CDCl_3 as solvent and tetramethylsilane as internal standard.

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