conformation of Figure 12, but only with increased 3-6-11 non-bonded hydrogen interactions and with eclipsing of the α-β carbon-hydrogen bonds.

The semidione 12 of the freshly purified cis-diketone 75 was prepared in dimethyl sulfoxide-t-butanol by the procedure of Russell and Strom, and the electron paramagnetic resonance (EPR) spectrum measured in order to obtain experimental information regarding the actual conformation of 75. The observed 48-line spectrum (Figure 14) is a triplet having 16 equally spaced lines under each peak. The large triplet hyperfine splitting constant is about 7.5 gauss, and the small splitting between each peak is about 0.5 gauss. Although a complete analysis was not possible by inspection, several of the possible conformations of 75 proposed above can be eliminated on the basis of the EPR spectrum.

The magnitude of the hyperfine splitting constant $a_H$ of the electron in the semidione 12 with the α-hydrogen atoms is determined by the Heller-McConnell equation,

$$a_H = \rho_c B \cos^2 \theta + B' \rho_c$$

where $B \sim 0$, $\rho_c$ is the spin density of the carbonyl carbon atom, $B$ is a constant between 40 and 60 gauss, and $\theta$ is the dihedral angle between the carbonyl $p_z$ orbital and the carbon-hydrogen bond. Examination of models of the symmetrical conformations (Figures 7 and 12) of