bicyclic products, even in the attempted condensation of the trans-dibutyric ester 86 to the less strained trans-bicyclo[8.2.1]tridecan-5-ol-6-one (87), was, therefore, attributed to the instability of the trans-bicyclic products and to a large entropy barrier to cyclization in the trans case.

The cis-acyloin 27 was readily reduced to cis-bicyclo[6.2.1]undecan-4-one (111) with zinc and hydrochloric acid, and the cis-acyloin 27 and the cis-diketone 25 both reacted with Fehling's reagent to give 4-hydroxy-cis-bicyclo[6.2.1]decan-4-carboxylic acid (131).

The electron paramagnetic resonance spectrum of the semidione derivative (123) and the nuclear magnetic resonance spectrum of the quinoxaline derivative (132) of the cis-diketone 25 were measured. Possible conformations of the cis-diketone 25 were discussed in light of the spectral data.