

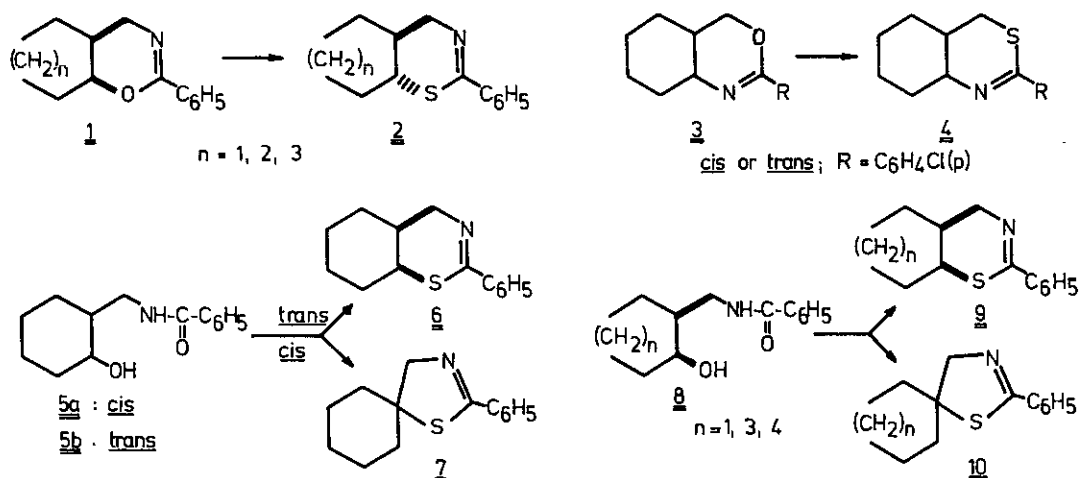
SYNTHESIS AND STEREOCHEMICAL STUDIES OF CIS AND TRANS CONDENSED-SKELETON
5,6-DIHYDRO-2-PHENYL-4H-1,3-THIAZINES. AN UNEXPECTED SPIROCYCLIZATION

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We found that cis-5,6-alkylene-5,6-dihydro-2-phenyl-4H-1,3-oxazines (1) could be converted into the corresponding trans-1,3-thiazines (2) via a method (P_4S_{10} , 130 °C) analogous to that used by Meyers for related purposes (J. Org. Chem. 25, 1147 /1960/). In contrast, the corresponding trans isomers could not be transformed even when a longer reaction time and/or elevated temperature was applied, but most of the starting material was recovered unchanged. However, in the case of both the cis and trans positional isomers, the 3 $\rightarrow$ 4 0 $\rightarrow$ 5 exchange could be carried out with good yields.



cis-5,6-Tetramethylene-5,6-dihydro-2-phenyl-4H-1,3-thiazine (6) was obtained by heating 5b with P_4S_{10} . In the analogous reaction with the cis isomer 5a, an unexpected spirocyclization was observed and 1-thia-2-phenyl-3-azaspiro(4,5)-decene-2 (7) was obtained. When cis-2-benzoylaminomethyl-1-cyclopentanol (8, $n = 1$) was heated with P_4S_{10} , thiazine 9 and spiro compound 10 were formed in 1:1 ratio, but in different ratios for the higher homologues (8, $n = 3, 4$). An X-ray diffraction study of trans-5,6-trimethylene-5,6-dihydro-2-phenyl-4H-1,3-thiazine (2, $n = 1$) showed that the C(5)-C(6) bond is significantly shortened, which explains the unusual formation of the trans-trimethylene derivative.