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## Phosphorus, Sulfur, and Silicon and the Related Elements

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### 2-FORMYL-2,5-BIS(METHYLTHIO)-3H-PYRANE FROM 1,2-BIS(METHYLTHIO) -1,2-DICYANO-CYCLOBUTANE

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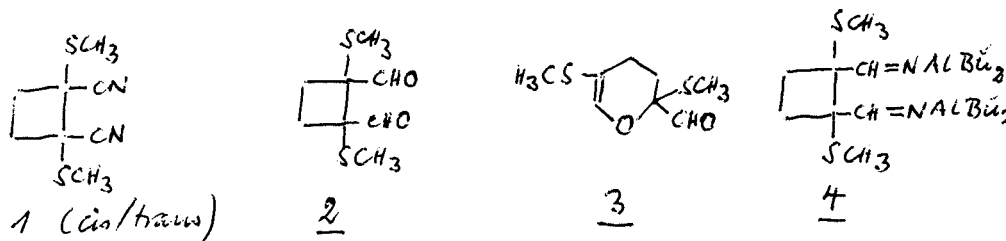
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2-FORMYL-2,5-BIS(METHYLTHIO)-3H-PYRANE FROM 1,2-BIS(METHYLTHIO)-1,2-DICYANO-CYCLOBUTANE

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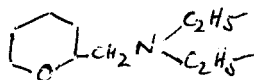
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1,2-Bis(methylthio)-1,2-dicyano-cyclobutane (1), easily obtainable by spontaneous dimerization of  $\alpha$ -methylthio-acrylonitrile was treated with dibutylaluminiumhydride in order to obtain the corresponding 1,2-dialdehyde (2):



Instead of 2 the dihydropyran derivative 3 was isolated along with some other products which are formed from the diimine derivative 4 being the primary reduction product of 1. The constitution of 3 was proved not only by analytical and spectroscopic evidence but also by treatment of its semicarbazone with Raney-nickel in ethanol yielding 2-diethylamino tetrahydropyran (5).

3 is also formed when methane sulphenyl chloride is added to acrolein at low temperature with subsequent treatment of the addition product with triethylamin.



The mechanism of the formation of 3 is discussed in terms of the stability of the cyclobutane ring as a function of substituents.