1-Bromocyclohexene from *trans*-1,2-Dibromocyclohexane; a β-Elimination by a "Complex Base"

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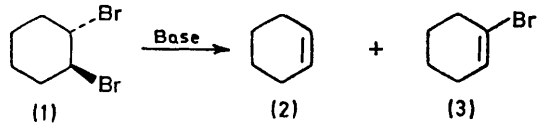
Summary The action of $NaNH_2$–Bu^tONa on *trans*-1,2-dibromocyclohexane under mild conditions gives 1-bromocyclohexene in good yield.

A SURVEY of the literature on β-eliminations brought about by bases, shows that *syn*-eliminations[1] are useful synthetically. There is evidence that the nature and structure of the



(1) (2) (3)

bases used are important in these reactions.[2] Our previous work has shown that "complex bases"[3] can remove a proton under abnormal conditions,[3,4] and also favour *syn*-eliminations in halogenobenzenes[5] and 1-chlorocyclohexenes.[6] Proof of the generality of the latter property was obtained from preparing some acetylenic hydrocarbons difficult to obtain by other means.[7] This result led us to a study of the synthesis of 1-bromocyclohexene from *trans*-1,2-dibromocyclohexane. To our knowledge, no satisfactory method has so far been found for this.[8] Treatment of the dibromo-compound (**1**) with base produces (**2**) and (**3**) (see Table). Compound (**2**) results from debromination as occurs with compounds having two antiparallel bromine atoms,[8] whereas (**3**) can only be formed as the result of *syn*-elimination. The behaviour of the "complex base" ($NaNH_2$–Bu^tONa) is different of that of either $NaNH_2$ or Bu^tONa used separately.

Action of bases on trans-1,2-*dibromocyclohexane* (**1**) (40 mM) *in THF at* 20° *for* 22 h

Base (mM)	Product (%) (1)	(2)[a]	(3)[a]
$NaNH_2$ (180)	90	trace	0
Bu^tONa (180)	70—75	0	trace
$NaNH_2$–Bu^tONa (120—160)	0	36	60[b]

[a] Measured by g.l.c. using the internal standard method. [b] Isolated pure: 50—55%.

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