PREFACE

The present dissertation consists of two parts. The first part is an attempt to find out the exact mechanistic course of the reaction of aromatic N-oxides with electrophilic acetylenes viz., phenyl methyl propiolate. It has been suggested by Huisgen *et al* that a concerted (or a two-step) cycloaddition is involved in the first and rate-determining step of these reactions. This step is supposed to be reversible, and the cycloadduct furnishes the end-product in a sequence of further irreversible reactions. As a result a kinetic study of the reaction could be planned. Also this study was undertaken in order to verify whether an alternative mechanism involving a third body participation (for example, another molecule of the N-oxide) was operative here. This alternative pathway is discussed in detail in the main body of the present dissertation. However, on the basis of kinetic studies it appears that a concerted cycloaddition is, indeed, operative here.

The second part furnishes preliminary studies of the reactivity pattern of α-amino nitrones. These nitrones constitute a potential 4-centred-6-electron π-system closely analogous to butadiene dianion which is energetically disfavoured and should, therefore, be highly reactive. The N-cyclohexyl- α-amino nitrone described in the dissertation is quite unstable and undergoes facile displacement reaction with benzyl chloride. A further sequence of reactions culminating in the formation of benzaldehyde establishes the pericyclic reaction involved here. Further studies regarding this type of reactions is in progress.

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August, 1980.