PREFACE
The investigations embodied in this thesis were undertaken with two objectives. Firstly, to synthesise some hitherto-unknown ring systems and to study the substitution reactions of these new systems as well as those of the previously unexplored but known ring systems in order to provide the medicinal chemists with some new compounds which, eventually, may prove biologically active. Secondly, to prepare polyvinylbenzothiadiazole moiety with a view to procure potential fire-resistant polymers which would find use in the home, industry and defence alike. It is gratifying to note that both the objectives have been substantially realized.

The thesis has been divided into three chapters namely, introduction, discussion and experimental. The introductory chapter gives a brief resume of the present day knowledge of physical aspects of the 1,2,5-thiadiazole nucleus viz. molecular geometry, IR, Raman, UV, NMR and Mass spectral studies as well as the chemical properties with special emphasis on stability, reduction, electrophilic and nucleophilic substitution reactions, basicity etc. The mechanism of their formation by cyclisation method has also been reviewed.

In view of the isosterism of benzene and pyridine and therefore naphthalene and quinoline, the properties of quinoline moiety have been reviewed at length to establish
the analogy with the investigations incorporated in this dissertation. The properties of quinoline-N-oxide have also been enlisted.

The discussion chapter includes the methods of syntheses of various 1,2,5-thiadiazolotriazolines ring systems in order to draw a comparison with the synthesis of two hitherto unknown and rest of the known ring systems by the new approach followed in the present investigations. The structure elucidation of the ring systems and their derivatives, achieved by spectral analysis, has also been discussed in detail.

Details of the synthesis of 5,5'-diethoxy-bis-benzo-2,1,3-thiadiazole and 2-methyl [4,5-e] oxazolobenzo-2,1,3-thiadiazole have also been provided and their structure elucidation studies have been discussed. The synthesis, fire-resistant properties and TGA studies of the 5-polyvinylbenzo-2,1,3-thiadiazole have also been included.

The synthesis and substitution reactions of 4-bromo-6-methylbenzo-2,1,3-thiadiazole and its 4-nitro-derivative have also been discussed giving details of the structure elucidation studies.

The concluding chapter describes the details of the experimental procedures. Bibliography of the relevant references and summary of the work embodied in this thesis have been appended in the end.