Studies of mesoionic compounds have received considerable attention in recent years, especially since the realisation that such compounds undergo a variety of reactions and are biologically active.

In this thesis, entitled "Reactions of Mesoionic Compounds and their Biological Evaluation" the preparation of various substituted sydnones and their electrophilic substitution reactions to get the 4-substituted sydnones are described. Selected few sydnones were subjected to biological evaluations in albino rats and the results are included.

In Chapter I, a discussion on the general nature of mesoionic compounds is reviewed. Here the mesoionic compounds have been classified into two general types, having the two atoms contributing two electrons to the five membered ring, being adjacent or non-adjacent. Attention has been focussed on the change of spectroscopic and chemical properties of the two types.

In Chapter II, the preparation, mechanism of formation and representation of sydnones has been mentioned. Then, the physical properties like, i.r., u.v., n.m.r.,
dipole moment, X-ray and fragmentation pattern in sydnones have been discussed. An argument for the aromatic character of sydnones is its ability and stability to undergo electrophilic substitution at position -4. It has been however pointed out here that the physical properties never agree to formulate these compounds as aromatic. In the light of all these, how difficult it is to explain the aromaticity of these compounds and their structural representation has been focussed on.

Amongst the chemical properties, halogenation and other electrophilic substitution reactions that have been carried out with sydnones are being mentioned. How some of these reactions have led to the preparation of heterocyclic systems and other mesoionic compounds have been discussed. Then, a detailed account of biological properties of sydnones is given. The necessity of undertaking the present work - to study the effect of other substituents on the tolyl sydnones has been pointed out here. It has also been pointed out, that there are no reports of sulphonyl chloride and sulphonamide derivatives of sydnones being synthesised.

In Chapter III, the various methods of preparing the intermediates, sydnones and their derivatives have
been recorded. Methods used to screen some of the sydnone derivatives have been mentioned.

In Chapter IV, experimental details of the preparations have been given. The general methods for the common synthesis of compounds have been given in detail and similar compounds are given in a tabular form for their physical data. References are given for the known compounds.

The interpretation of the spectra of sydnone-4-sulphonyl chloride and its derivatives has been made, as it was necessary to establish beyond any doubt about the presence and position of $-\text{SO}_2\text{Cl}$ in the ring. The i.r. value shows the presence of $-\text{SO}_2\text{Cl}$ group and n.m.r. indicates that the $-\text{SO}_2\text{Cl}$ group has not entered the phenyl nucleus, as it shows only one type of aromatic protons and mass spectra supports it, in giving a molecular ion peak for $C_6H_5^+$. Another interesting feature of this mass spectral data is the elimination of $-\text{SO}_2$ with the simultaneous rearrangement of Cl to the sydnone ring. It has been pointed out that such elimination-rearrangements are cited in the literature.

In Chapter V, the details of the biological testing
are mentioned, and the results are tabulated. However, for want of facilities the sulphonyl chloride and its amide derivatives have not been screened.