PREFACE
The research programme incorporated in the present investigations consists of the following two aspects:

(i) Synthesis of various condensed bridgehead heterocyclic systems containing thiazole, thiadiazole, thiazine and thiadiazine nuclei.

(ii) Evaluation of their useful biological activity (antibacterial and antifungal).

In the synthetic part, which constitutes the major feature of the work, the following types of condensed bridgehead nitrogen heterocyclic systems have been synthesized.

a) Thiazolo[3',2':2,3]-as-triazino[5,6-b]indole
b) Thiazolo[2',3':3,4]-as-triazino[5,6-b] indole
c) Thiazino[3',2':2,3]-as-triazino[5,6-b] indole
d) Thiazino[2',3':3,4]-as-triazino[5,6-b] indole
f) Quinoxalino[2',3':4,5] thiazolo[2,3-c] indolo[2,3-e]-as-triazine
g) Thiazolo[3,2-b]-s-triazole
h) Thiazolo[2,3-c]-s-triazole
i) Pyrazolo[3',4':4,5] thiazolo[3,2-b]-s-triazole
j) s-Triazolo[3,4-b]-1,3,4-thiadiazine
k) s-Triazolo[3,4-b]-1,3,4-thiadiazole
l) s-Triazolo[3',4':2,3]-1,3,4-thiadiazino[5,6-b]quinoxaline
m) Imidazo[2,1-b]-1,3,4-thiadiazolo[2,3-c]-s-triazole
n) Thiadiazolo[3,2-b] imidazo[4,5-b]quinoxaline
o) Bis-(s-triazolo[3,4-b]-1,3,4-thiadiazolo[3,2-b]imidazo[4,5-b] cyclohexane]-5a,6a-diene)
Imidazo[2,1-b]-1,3,4-thiadiazole
Thiadiazolo[2',3' : 2,1] imidazo [4,5-b]-quinoxaline
cis-8, 8a-dihydropyrazolo[3',4': 4,5]thiazolo[2,3-b]-s-triazolo[3,4-b] [1,3,4]thiadiazole.
Spiropiperidine-4',7(8H)-[6H]-pyrazolo[3,4-d]-thiazolo[3,2-b]-s-tetrazine.

The structures of the compounds have been characterised by IR, 'HNMR spectral studies in addition to Elemental analysis. In some cases, where there was the possibility of obtaining more than one isomer during cyclization, the structural assignment of the isomer obtained has been firmly secured either by 'HNMR spectral studies or by unequivocal synthesis of one of the isomers.

The second aspect of the programme relates to the evaluation of the biological properties of synthesized systems and confines to the following studies:

a) Antibacterial
b) Antifungal

The thesis consists of six chapters. In the chapter-I, the literature survey, dealing with the versatile applications of thiazole, thiadiazole, thiazine, thiadiazine and their condensed bridgehead nitrogen heterocyclic systems has been reported. The chapter-II describes the aim, scope and plan of the present work and the reasons that prompted the author to undertake the present work. Chapter-III...
has been divided into two sections. First section deals with the general methods of synthesis of thiazole, thiadiazole, thiazine and thiadiazine derivatives followed by the discussion of the experimental results of the present investigations. The second section describes the experimental findings.

Chapter IV and V deal with evaluation of antibacterial and antifungal activities respectively. One or two compounds (on a representative basis) from each series have been screened for their biological properties.

The thesis ends with a brief summary (Chapter VI) of the work undertaken in the present investigations, followed by bibliography and list of publications.