PREFACE

Various aspects of the problem of atmospheric ozone have been engaging the attention of workers in the Physical Research Laboratory, Ahmedabad under the guidance of Professor K.R. Ramanathan. I have been associated with this work for the last several years and the results reported in this thesis form part of my work.

Chapter I :- A comparison is made of the ozone observations at Srinagar, New Delhi and Mt. Abu with those over Tateno (Japan). The large difference between the ozone amounts at Tateno (36°N) and Srinagar (34°N) in winter and spring supports the view that geographical conditions exercise a marked influence on the ozone amounts. The Indian region has exceptionally low amounts of ozone even in winter and spring. The position of the station with respect to the quasi-permanent pressure system has to be taken into account.

Chapter II :- A review of the methods of determining the ozone content at different levels has been made. The advantages and the disadvantages of each method are discussed.

Chapter III :- A survey of the work previously done in India on the vertical distribution of ozone by the umkehr method is made. The Srinagar umkehr observations showed that on some occasions, when the total ozone amount was high the ozone content in the 6-12 km region was even larger than in the 12-18 km region. A comparison of the vertical distribution
of ozone obtained by method B (1) by using two pairs of wavelengths and (2) by applying secondary scattering correction to the umkehr curve is given.

Chapter IV:-- The vertical distributions of ozone at stations in different latitudes in the northern hemisphere have been calculated from the available umkehr curves using the same method and the approximate hemispherical distributions of ozone in the vertical has been obtained for winter-spring and summer-autumn. The results of these are discussed together with results of frost point measurements made in the lower stratosphere and in relation to meridional circulations which have been suggested for the stratosphere. Reprints of published papers are added.