ACKNOWLEDGEMENTS

This thesis has evolved under the kind supervision of Prof. J. N. Desai. Prof. Desai has been my 'guide, philosopher, friend' and more. His clear incisive approach to scientific problems, his bold and imaginative experimentation and his receptivity to new ideas and techniques have had a profound influence on me. The success of the eclipse expedition would not have been possible without his inspiring guidance, constant encouragement and unfailing optimism in the face of seemingly impossible odds. His cheerful attitude to work and everwillingness to discuss a problem, be it in the office, at home or even in a tea shop has made research activity with him a pleasurable exercise. I have also been overwhelmed by his kindness and unassuming nature many a time. I consider it a great privilege to have worked with him and am deeply indebted to him for all that he has done for me.

I am extremely grateful to the Director Prof. D. Ial for his enthusiastic support and constant encouragement throughout the course of this work. It was through his good offices that the film required for the eclipse could be procured at short notice. He was also extremely helpful in the course of the analysis in obtaining from Naval Research Laboratory, Washington, some satellite pictures of the corona taken on eclipse day.
I would like to record my indebtedness to Prof. P. V. Kulkarni, the Chairman of the area for his keen interest in my work. He was also kind enough to loan a six inch aperture achromat lens for use as light collector in the experiment.

I would like to take this opportunity to express my deep gratitude to Prof. Tom Gehrels, Lunar and Planetary Laboratory, University of Arizona, Tucson, for his continuing interest in my scientific career. He introduced me to the fascinating field of Asteroids and also gave me an opportunity to get acquainted, at first hand, with some of the men and instruments of modern Infrared Astrophysics.

I am grateful to Prof. Jay M. Pasachoff, Williams College/Hopkins Observatory, Williamstown, Massachusetts and the National Geographic Society, Washington, D.C., for a timely supply of the precalibrated film used at the eclipse. Prof. K. Shivanandan of the Naval Research Laboratory, Washington, was very helpful in contacting Dr. H. J. Koomen from whom I received white light satellite pictures of the corona taken on eclipse day. I am grateful to both of them.

I would like to thank Prof. M. K. V. Bappu, Director Indian Institute of Astrophysics and Prof. K. R. Sivaraman of
the same institute for their keen interest in this work and for sending me prints of their white light photographs of the corona.

Mere words would be insufficient and insincere in recording my gratitude to my friend and colleague, N.M.Ashok for all that he has done for me, both on and off the field. He has been closely associated with the work right from its conceptual stages and has helped me in ways too numerous to chronicle here. We have also been involved together in a number of other activities of the group in all of which, I have greatly benefited from his ever helpful nature and unbounded enthusiasm. If at all I can formally thank him, perhaps it should be for initiating me into the fine game of tennis.

It is a privilege and a great pleasure too, to thank Harish Bhatt. I have greatly benefited from the numerous discussions, I had with him on Astrophysical problems in general and on several aspects of the eclipse results in particular. His ready appreciation of the experimental difficulties and gentle encouraging attitude have greatly helped me in the course of this work.

It is my pleasant duty to acknowledge the help I received, in various forms from my other student colleagues
in the group, namely Kailash Sahu and Ranjan Gupta. I am particularly grateful to Sahu for the numerous useful discussions on Fabry-Perot techniques. I am also indebted to Mr. T. N. Rajaraman for initiating me into the fine art of field experimentation and for enlivening the tedium of many a long hot summer afternoon with breezy accounts of his many escapades.

Mrs. S. K. Jani and Mr. H. I. Fandya have greatly helped me in the computations and in the tedious task of plotting innumerable graphs. It is a pleasure to acknowledge their invaluable help.


I would be failing in my duty if I do not record with many thanks the services—always cheerfully rendered—of Messrs D. R. Ranpura of Photography and Jadhavbhai Panchal
of Workshop. Jadhavbhai fabricated the interferometric set up in record time and was, at hand, at Gadag to help. Ranpura was ever ready with his portable dark room kit at Gadag and invaluable in the quick processing of the test exposures. He has also been extremely helpful in the extensive post eclipse photographic processing. I would also like to thank Mr. Nayan Dave of Photography Messrs V.R. Dave, Poonambhai Panchal, Atmaram Panchal, G. Macwan of Workshop and Harish Panchal of the drafting section.

Dr. D.B. Vaidya of Gujarat College, Ahmedabad, was of great help, particularly during the crucial moments of totality. I am deeply grateful to him.

It is a pleasure to record my thanks to Dr. P.D. Angreji of the Vedhshala, Ahmedabad, for the loan of the Celestron-8 telescope, for his magnificent hospitality at Gadag and also for keeping the astrologers at bay during the crucial moments of totality. The enthusiastic help of the three amateur astronomers Messrs Piyush Patel, Pravir Pandya and Praveen Panchal and of Dr. V. Kamble of the Community Science Centre, at the eclipse site is gratefully acknowledged.

I am also grateful to Prof. R.V. Pratap for interesting discussions on the oscillatory pattern observed in the
Celestron experiment, to Prof. S. K. Alurkar for the eclipse day Hα pictures, to Dr. V. B. Sheorey for discussions on the excitation mechanism of Coronal lines and to Dr. G. Subramanian for his keen general interest in my work.

The task of elegantly typing the manuscript has been enthusiastically shouldered by Mr. V. C. Mathew. It is a great pleasure to acknowledge his invaluable help which has been available not only during this thesis work but throughout my student career in the group.

The painstaking job of cyclostyling the manuscript with the minimum of blotches has been ably done by Mr. Muralidhar.

I am grateful to Mrs. Bharucha, Mrs. Ghia and the library staff for their ready assistance and co-operation on all occasions. The onerous task of xeroxing the many diagrams has been ably executed by them.

There is more to a research student's life than mere academics which can at times become terribly dull, drab and depressing. In these moments of despair it was left to my good friend Don Patro to rescue me, usually, by suggesting a late night movie. Inspite of his numerous ailments - both real and imaginary - and countless commitments, he has
always been available with a ready smile and a kind word.
Thank you, Don.

My neighbour A.H. Sekhar has been a tower of strength
for me. I am grateful for his many kind deeds, unobtrusively
executed and for his very cheerful companionship.

My other batchmates Kamlesh, Avinash, Rama and
Pankaj deserve a special word of thanks. There was always
a espirit-de-corps in the batch which I cherished. I am
particularly grateful to Kamlesh for numerous discussions
on less weighty but equally important worldly matters of
mutual interest which kept us awake, many a time, till the
early hours of the morning.

I have greatly enjoyed the convivial atmosphere of
the hostel punctuated by long after dinner walks, cross
country cycle trips and acrimonious late night discussions.
It is a delight to acknowledge those who made it all
possible. In particular I would like to thank Hussain,
Nautiyal, Venkat, Shyamalal, Ambastha, Ajay, Mohan and
Nagesh.

Last but not the least I would like to record my
deep gratitude to Ashok's parents and to my good old
friends, Messrs B.V. Chaubal, S.M. Maru and S.P. Torwar for their understanding, encouragement and co-operation throughout the course of this dissertation.