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The articles published in this special issue were earlier submitted for publication in the Proceedings (Earth and Planetary Sciences) The Editor of the Proceedings suggested that the articles may be more suitable for a larger general audience and that Current Science would be a better medium for publishing them. A special issue of Current Science is being brought out after getting the consent of the Guest Editor and the authors

–Editor

Preface

Human curiosity and observations have had precedence over *in situ* measurements in almost every sphere of scientific development. The scientific conjectures based on curious observations had conceived of the formation and composition of universe that is being tested with the help of modern tools and is proving to be largely correct. The optical observations during prolonged period have been the main source of ancient conjectures and hypotheses especially when it was not known that optical radiations are nothing but a very barrow window of the electromagnetic radiations. The discovery of electromagnetic waves by James Clark Maxwell and generation of electromagnetic waves by Henrich Hertz have proved to be the greatest boon for finer investigations and study of the Universe, the Galaxies, our own Solar System and individual planets. The use of ground-based probing using electromagnetic waves provided one of the greatest excitements and existence of ionized layers in our own atmosphere. The discovery of the 'ionosphere' around our own planet made by Sir Edward Appleton was highly engaging and it posed an exciting challenge to the space scientists around the world Using only ground-based probing the detailed structure and compositional details were discovered. Indian scientists took an active part in the ionospheric studies using ground-based electromagnetic probing during the International Geophysical Year (IGY).

The investigations of our own atmosphere and ionosphere using orbiting satellite started during the IGY in 1961 with the launch of Sputnik by USSR. This success added a new chapter in the history of human efforts in studying the space and it has steadily developed Although Indian scientific community has been fully conscious of the global developments in space explorations but it has not been able to stand the competition and cope-up with the cost factor. Our present efforts in studying the space has come up to rocket-borne experiments and exploring deeper space using optical and radio telescopes.

Our scientific capabilities to step-up our efforts for studying other planets using orbiting satellites or using flybys do exist and they can be exploited whenever opportunity arises. Keeping this in view various research projects have been operating in the country and we have had National and International Symposia strictly devoted to planetary studies. Scientific awareness and preparedness is an important strategy even when opportunity for active experimentation does not exist. Our scientists have gone abroad and have made best use of the opportunity and have pursued their studies in areas in which they were never exposed before. Therefore, the intent of this special issue of *Current Science* is to make available to our readers an update on the science of Inner Planets and Comets as it is governed by the Sun at the centre of the Solar System.

Leading international and national space scientists were approached for contributing their papers for publication in this special issue. With a view to covering all aspects of the Inner Planets, we had to limit to one leading paper each pertaining to Sun, Planets and Comets. We have included papers wherever we could find appropriate contributions from Indian scientists We are glad that we could include up-to-date aspects of Inner Planets in this volume and our readers would be able to get a good glimpse of the Inner Planets We are sure that after reading this issue an inquisitiveness about up-to-date knowledge of Outer Planets may arise and we will not hesitate to bring out another issue on Outer Planets to accomplish an update on our Solar System

R. N SINGH