

## **PREFACE**

One of the intriguing and enduring mysteries of the Planet Earth has been the great worldwide extinction event that signalled the end of the Mesozoic era around some 65 million years from the present and the extinction of a number of animal and plant species including the major groups of the ruling reptiles called dinosaurs. During the last decade a number of hypothesis have been proposed on the basis of intensive high resolution stratigraphic data to explain the terminal Cretaceous mass extinction. An immense volume of data especially palaeontological, sedimentological, geo-chemical, geo-magnetic and palaeoclimatic relating to the Cretaceous/Tertiary boundary (transition) has therefore been reported from various parts of the world wherever such a boundary exists.

Several mechanisms of mass extinction have been suggested like drastic global sea-level regression occurring simultaneously with extensive volcanic eruptions and a strong pulse of meteoric impacts resulting into the effects of global darkness, subfreezing temperatures and releasing of chemical agents such as cyanide, ammonia, methane, osmium, iridium and arsenic. Volcanism has been proposed as a mechanism that could introduce large amounts of trace elements to the world oceans and result in the toxification of the marine life. The Deccan Traps of India, covering a surface area of  $\sim 10^6$  km<sup>2</sup> has been cited in support of the latter hypothesis.

In the above context, an attempt has been made by the author in the pages to follow, to bring out the intricacies of the K/T boundary sequences in Kutch where it has been possible to gather many fold evidences towards formulating a multiple hypothesis leading to the explanation of the mass scale faunal extinction. In order to provide the necessary chronostratigraphic, biostratigraphic and magnetostratigraphic context for interpreting such a theme the author has integrated lithostratigraphic, biostratigraphic, chronostratigraphic and magnetostratigraphic approaches to the densely sampled K/T boundary sections in Kutch. The conclusions appear to be very fascinating.