



Elements of Palaeontology. S. K. Shah. Geological Society of India, Bangalore. 2013. 144 pp. Price: 350 INR. ISBN: 9789380998060.

Palaeontology – the study of past life through fossil records – is one of the oldest and fundamental branches of earth sciences. Its origin in India goes back to the early 1800s, when fossils were described from Central India by the British army. There can be no doubt that palaeontology has witnessed significant advancement during the last few decades and, as a consequence, many old concepts, hypotheses and techniques have been replaced by new ones, particularly after the advent of cladistics and plate tectonics in the 1960s. In the absence of a modern and state-of-the-art book on palaeontology, it is difficult to know the current state of knowledge on the subject. There are hardly any books available on palaeontology written by Indian authors and a majority of teachers rely upon books written by the foreign palaeontologists. This book by S. K. Shah has come at a time when there is a dearth of books on palaeontology, including a modern perspective on the subject, written by an Indian author.

This is a concise, well-written and well-presented book, consisting of a wealth of information about palaeontology and its various applications. The book is divided into 11 chapters. The first three chapters deal with the basics of palaeontology, chapter 4 covers applications of fossils, chapters 5–7 deal with main invertebrate fossil groups, chapter 8 focuses on important vertebrate fossil groups, chapter 9 deals with plant fossils, chapter 10 encompasses microfossils and

the last, i.e. chapter 11 deals with trace fossils and a few unusual preservations.

Chapter 1 sets the stage for understanding the science of palaeontology, encompassing fossils and fossilization as well as methods of fossil collection and their study. Chapter 2 focuses on the taxonomic classification of organisms from species to phylum in ascending order, code of biological nomenclature and also introduces major groups of invertebrates, vertebrates and plants. Chapter 3 describes various theories of origin and evolution of life, ranging from Lamarck, Darwin, punctuated equilibrium to Miller's experiment. It also presents a short overview of the earliest evidences of life on earth. Chapter 4 deals with the applied aspects of palaeontology. It describes the applications of fossils in the reconstruction of palaeoenvironments, palaeoecology, palaeoclimate, palaeogeography and for dating rock layers as well as their uses in oil industry. Chapters 5–7 discuss fossil records, morphology, biological affinities, ecology, geological distribution and stratigraphic significance with special reference to the Indian stratigraphic record of major invertebrate groups, notably corals, bryozoans, graptolites, brachiopods, molluscs, echinoderms and trilobites. Chapter 8 briefly discusses the vertebrate fossils. Classification of vertebrates, their general characteristics, origin, major evolutionary transitions through geological time and the Indian fossil records have been dealt with in a concise manner. The history of plant life, transition of plants from water to land, rise of the angiosperms and floral provinces with special reference to the flora of the Gondwana Supergroup of peninsular India have been dealt with briefly in chapter 9. Chapter 10 covers the microfossil groups. It discusses the types of microfossils and morphology, geological distribution with special reference to the Indian stratigraphic records and applications of some important microfossils, namely foraminifers, ostracods, conodonts, radiolarians, diatoms, spores, pollen grains, dinoflagellates and chitinozoans. Chapter 11 briefly introduces preservation, types and applications of ichnofossils and a few Late Precambrian to Cambrian exceptional fossil preservations of the world such as Ediacara, small shelly and Burgess shale faunas.

The geological timescale, classification of important fossil groups of invertebrates and vertebrates with their

geological ranges, references and a list of suggested further reading are provided at the end of the book. This book has been marvelously designed. Illustrations are appropriate and well-labelled in most of the cases. However, inclusion of more photographs of fossil specimens, glossary defining important terminologies and indexing may make this book more easy to use, but it could be possible that these inclusions are beyond the scope of the book.

The book differs from most others at this level in several respects. First, it is simple, concise and easy to comprehend. Secondly, it provides important information on invertebrate, vertebrate and plant fossils at one place, as this feature is almost absent in many other books on palaeontology. Thirdly, it is one of the books on palaeontology discussing fossil groups within an Indian context. These characteristics make the text attractive for teachers, readers, young researchers, amateur palaeontologists and a wide range of students, including those of geology, earth sciences and biology.

Overall, it is clearly a well-designed, well-researched and balanced book, where the author has put in, his more than 40 years of teaching and research experience. In terms of production, the format, paper quality, font size and binding are quite good. The size of all illustrations is good. The language is quite impressive; unfortunately, in some cases, there is a mix of American and British English spellings, but that may be probably because the International Commission of Stratigraphy insists on using American spelling for stratigraphic nomenclature. The price (INR 350), makes it well within the reach of a wide range of readers from students to amateur palaeontologists. It is a welcome book for graduate and postgraduate students of geology and biology. I place it in the 'must buy' category for students who are pursuing graduation and postgraduation degrees and preparing for various competition examinations. I also recommend that libraries of various universities and colleges should buy it for the benefit of their users.

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