

Fundamentals of Geology. A. B. Roy. Narosa Publishing House Pvt Ltd, 22, Delhi Medical Association Road, Daryaganj, New Delhi 110 002. 2010. 314 pp. Price: Rs 4200; US\$ 89.

As an undergraduate student, many of us might still remember the book entitled, *A Textbook of Geology* by P. K. Mukherjee first written in seventies (?) and then went through several editions. Several textbooks of geology/earth science have been published since then by Indian authors and not to mention a number of books by international authors with digital media and illustrations. Most of the international publications have remained inaccessible to common undergraduate students of geology in India as they are expensive and also not available in small towns. This is precisely why the book by P. K. Mukherjee became extremely popular and one can possibly expect the same for this book by A. B. Roy.

The book under review has been written primarily for the undergraduate students who intend to do a 'major' in geology at a later stage, but can also be a useful handbook for those who need to use geology in their profession such as engineering projects, environmental management, mining engineering and exploration industries. The most important aspect of this book is the simple language and Indian examples/illustration wherever possible. The grey colour illustrations dampen the impact a bit but I guess this was a compromise between pricing and quality.

The book has three major parts. Part I deals with physical geology, Part II discusses dynamic geology, and Part III focuses on the interactions between humans and geology such as resource management and natural hazards. Out of three major chapters of Part I, the first

two chapters introduce the science of geology nicely dealing with planetary evolution and composition of earth. The world of minerals and rocks has been presented with good and meaningful illustrations. The third chapter covers a wide gamut of earth surface features, processes and landforms. Given the importance and current interest in understanding the modern processes of earth system, this chapter does not quite do justice to these varied topics and misses out on the modern developments in process-based understanding of natural systems. However, the basic idea of the weathering and erosional processes in different environments resulting in great diversity of the earth's surface form is conveyed to the reader effectively.

Part II is divided into two chapters – historical geology and geodynamics. The historical geology chapter primarily introduces the classical concepts of stratigraphy, geologic time and fossil records. Simple sketches to illustrate the concept of stratigraphic successions, sedimentary structures, unconformity, etc. are admirable. Even better are simple morphological descriptions of fossils saving the beginners to learn complex terminologies. The geodynamics chapter starts well by introducing the global tectonics and mantle convection model, and then presenting the basic concepts of structural geology. The author has done justice to explain and illustrate this topic – critical to many geological applications. This chapter finally returns to plate tectonics concepts and global scale dynamics. Although the sequence of sections is a bit odd here, all topics stand out for their simplicity and clarity. In terms of content, this is probably the best chapter in the book, although the structure could have been better.

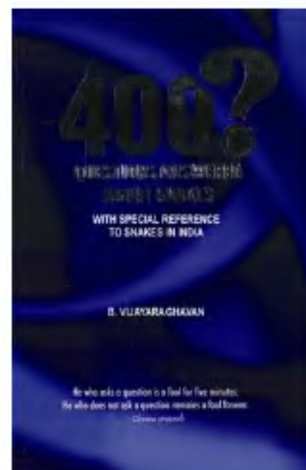
Part III has an interesting title – Geology and man – and has been clearly divided into two chapters. The first one is on geological resources (economic geology) and the second one focuses on geological hazards. The chapter on economic geology presents short but effective description of metallic and non-metallic deposits, fossil fuel, and groundwater resources, but a major gap here is a strong Indian context and examples. India has a rich mineral wealth and frequent reference to Indian economic deposits in each section would have been extremely valuable to emphasize the importance of geology to our young minds. A couple of

case studies of Indian economic deposits could have been useful. It was particularly disappointing not to find any Indian example in the section on coal deposits despite the fact that India is one of the largest coal producers in the world. The final chapter on geological hazards takes up four major hazards – earthquakes, volcanism, tsunami and landslides but misses out on floods which is one of the most disastrous hazards affecting large parts of the country. A short section on tsunami is welcome keeping in view the disastrous event in 2004 which affected a large population along the southern coast of India. The book ends with some nice colour plates although I would have liked these to be inserted at appropriate places.

In the end, the book certainly fulfills the expectations of a refreshing basic book on geology for beginners in India and I am sure that the readers will like this for its simplicity and clarity.

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400? Questions Answered About Snakes: With Special Reference to Snakes in India. B. Vijayaraghavan. The Chennai Snake Park Trust, Rajbhavan Post, Chennai 600 022. 2010. 231 pp. Price: Rs 120.

Reptiles are cold blooded animals that have scales. Broadly, this includes crocodilians, snakes, lizards, turtles and tortoises. No other group of animals in

the reptilian world is as much engulfed by myths, mysticism, hate and reverence as snakes. Its physical appearance of being slimy (though it is not), occurring in vivid colours, being limbless with forked tongue and venom that kills, producing hissing sounds and being a silent predator creates a fearful, and at the same time, queasy feeling for many. To add to this, folklore and myths about snakes fed through generations have widened the gap.

The book under review is an apt and a much called-for book for the masses to take that leap beyond fear, awe and reverence and to learn about snakes. It is an informational guide that helps laymen and scientists alike, by accurately and lucidly addressing a wide range of scientific, mythological and trivial questions.

True to the title, the book plunges head on answering questions rather than engaging readers in any introduction or preface. Categorizing the book under appropriate topics and presenting a list of questions at the beginning serves well for current day fast readers. The subjective index, listing both snakes and topics, proves useful for searches. For answers that need back reference, the author has done a good job in linking them well by providing appropriate question numbers within answers. This, I think, is a good way to cover topics both in a simple as well as comprehensive manner. The concise listing of venomous and non-venomous snakes, their families and genera, and life spans in tables and the vital data on snake species listed in the

red data book of the International Union for Conservation of Nature (IUCN) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) appendices make the book a valuable read.

Several interesting questions like 'What are the peculiarities of vision in the vine snake (*Ahaetulla* spp.)?', 'Are there snakes which dismember their prey before swallowing them?', 'Which is the most dangerous snake in India?', 'Which aquatic snake has twice as much blood as a land snake of the same size?' and 'Are all snakes cylindrical in cross-section?' have been answered very well. Muscular contractions or 'shivering' in pythons, sperm storage in snakes, *sarpam thullal* (snake dance) performed in Kerala and *ashta nagas* (eight serpent gods) have been well explicated.

Given the coherent approach of the book, it would have been valuable to supplement the answers with sketches or pictures either under the questions or as plates. Although the author has done a remarkable job by providing factual information, he should have addressed certain basic questions of 'What should one do if one spots or encounters a snake?' or 'Whom to contact for a snake rescue?', and provided a list of telephone numbers or organizations that work for the welfare of snakes. There are several organizations, like the Centre for Ecological Sciences, World Wildlife Fund, Centre for Herpetology, Madras Crocodile Bank Trust, Nature Conservation Foundation, Chennai Snake Park Trust,

Agumbe Rainforest Research Station and many more, that work on reptiles. Sharing this information about organizations and prominent individuals who are currently studying snakes in India will be helpful to students and others. A glossary of terms would have been quite useful. 'How can the sex of a snake be determined?' is a common question and warrants a more descriptive answer. Though the author has defined the method and suggests using a 20 cm rod, he does not talk about the width or how far into the cloaca, the probe should be inserted.

The book cover seems inappropriate for a book on snakes and looks more like a manual for an electronic gadget. However, the quotes selected are apt and sets the tone for further reading.

Starting from just 40 questions to answering 400 questions, the author has done a good job in researching and providing sententious answers. This is a book that every reptile enthusiast and educator should possess. It tickles the brain to question and inquire further. A question that crossed my mind is 'why do snakes have forked tongues and do each of the forks smell different things or smell things differently?'. I am sure the author will be flooded with more questions, which could be a natural progression to the next edition of the book.

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