

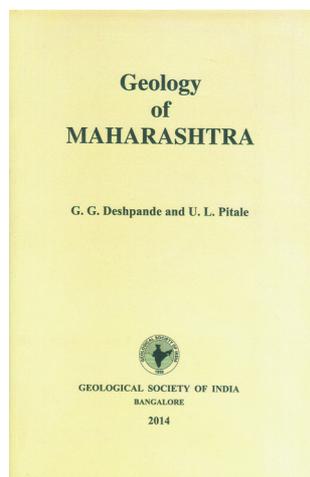
## BOOK REVIEWS

printer's devilry – made more devilish by the autocorrect feature of modern word processors. Kepler the amateur became an armature, and Tesla the Serbian, a Siberian!

I would have liked to see the law of refraction credited to Ibn Sahl who lived in Baghdad some 700 years before Snell. Given how short the book is, each reader will no doubt have a list of omissions of pet topics. But that cannot take away the author's achievement – this is the kind of book which can get a student hooked onto physics, if it falls into her hands at the right time. There is a need for such books, catering to each new generation, the way George Gamow's writings catered to the author's – (and reviewer's!) – generation. This is true even in the age of the internet – the ocean which contains everything one could hope to find. What is crucial is the personal perspective which a mere aggregate cannot convey. BASE has made a good beginning with *Glittering Facets of Physics*, and set a high standard for its successors.

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**Geology of Maharashtra.** G. G. Deshpande and U. L. Pitale. Geological Society of India, PB 1922, Gaviipuram P.O., Bangalore 560 019. 2014. viii + 266 pp. Price: Rs 500.

The state of Maharashtra is bestowed by diverse lithology ranging in age from

Archaean to Recent, some of which are associated with rich mineral deposits. Maharashtra hosts important and unique rocks from Indian geology, mostly belonging to the Dharwar craton, Central Indian Supracrustal Belt and Bastar craton. Besides this, it occupies a unique place in the physiography of Peninsular India with the lofty Sahyadri Ranges and the Konkan plains towards the west, the Satpuras hills to the north and the Deccan plateau proper. The grandeur of some landforms like basaltic hill ranges along the escarpments, mesas, buttes and coastal landforms like the basaltic wave-cut platforms, sea cliffs and sea caves are unparalleled in Indian geomorphology. Numerous rivers like the Krishna, Pranhita–Godavari and Tapi dissect, drain and nourish the fertile soils that support agriculture and horticulture.

The book under review is among a series of textbooks published by the Geological Society of India, Bangalore, that intends to appraise the students and professionals with the geology, stratigraphy and mineral resources of the state. The book is divided into nine chapters, mostly dealing with rocks that were formed at a specific time interval in Earth's history. In the introductory chapter, the authors provide informative and educative insights into the administrative divisions of Maharashtra, which generally tend to match with the agroclimatic and physiographic regions of the state. The chapter also provides glimpses on climate, soil, drainage, vegetation and landforms that would interest the students as well as those preparing for competitive examinations. The second chapter 'Historical review' deals with interesting snippets such as naming of Gondwanaland and Gondite rock after the Gond tribe from Nagpur region. It also gives a narrative on how the geology of Maharashtra has engaged the attention of geologists right from the advent of geological studies in India. The authors have done a great job by including the coloured geological map of Maharashtra and a simplified stratigraphic table that have great practical utility.

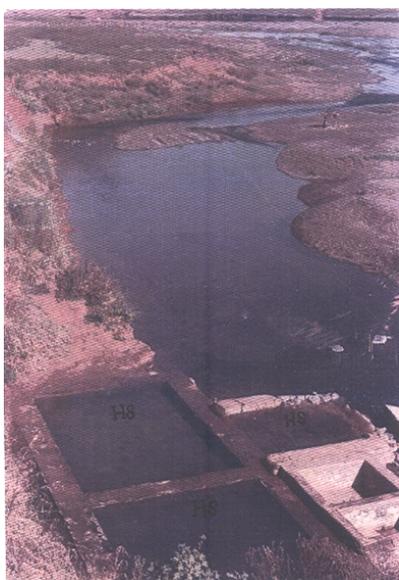
The authors need to be congratulated for their excellent summary on the Central Indian Supracrustal Belt. Their authoritative account of this important but complicated part of Indian geology reflects their in-depth knowledge and understanding of the terrain. Despite scanty radiometric ages, the authors have

provided a vivid and elaborate description of lithology, stratigraphy and the associated Amgaon, Sakoli and Satpura orogenies that makes pleasurable reading even to the layman. The content is precise, to the point and illustrated with field photographs and lithostratigraphic tables. An informative summary on the pre-existing geochronological data versus field disposition of the supracrustals is presented on Archaean rocks. The authors introduce the chapter on Purana Basins with an account of the Great Eparchaean Unconformity – an approximately 400 million year event of erosion and non-deposition in Peninsular India. After briefly introducing the Purana Basins of India, the authors deal with the spatial distribution, stratigraphy and sedimentation of the Kladgi Supergroup in the Kolhapur–Sindhudurg area of southern Maharashtra and the Pakhal Supergroup in the Pranhita–Godavari basin of northeast Maharashtra.

The coal-bearing Gondwana Supergroup has received special attention in the book with elaborate tables, illustrations and photographs. The authors describe the overall intracratonic distribution, structure, tectonics and fossil assemblage of the sediments. A great deal of effort has gone into explaining the classification of Gondwana strata; evolving a consensus on stratigraphy and attempting inter-basin correlations. The authors deserve appreciation for their attempt at simplifying some of these aspects for the readers. The topics on change in climate and environment of deposition make interesting reading. The Gondwanas have also been discussed at length at a formation level from important coal fields of Maharashtra. They have also included a small but informative chapter on the Infratrappeans. It deals with important stratigraphic units like the Bagh Beds, Lametas and other unclassified infratrappean sediments from Maharashtra. While the Lameta sediments have received greater attention in terms of rock types, stratigraphy and palaeontology, the content on the Bagh Beds is of a preliminary nature and needs to be updated in terms of developments in stratigraphy and environment of deposition described in recent publications.

Geologically, Maharashtra is synonymous with the Deccan Traps – the second most extensive geological formation in Peninsular India. The authors have done a commendable job in describing

the extent of the lava flows in terms of spatial distribution and thickness. In the section on structure of the Deccan Trap province, the authors mention some important lineaments and faults, but the inclusion of a lineament map is much desired. Recently gained knowledge on the structure and possible origin of the Panvel Flexure needs to be added in future editions to make the section more comprehensive. The attempt at presenting the chemostratigraphy and lithostratigraphy of the Deccan Trap is laudable. The authors have included the lithostratigraphy of the central, southeastern and eastern parts of the Deccan subprovince where chemostratigraphy is poorly understood and is complicated by normal–reverse–normal palaeomagnetic signature of the lava flows. Sadly though, the physical characters of lava flows need to be updated. The physical volcanology of the lava flows from the Deccan Traps has received considerable attention in the past decade. In the Deccan Traps, attempts at classification of lava flows on the basis of external morphology and internal structures have been initiated and their emplacement dynamics has been deciphered using modern volcanological tools. Such studies have led to the identification of pahoehoe, aa and transitional flows like slabby and rubbly pahoehoe. Recently, dykes, sills and other minor intrusive along the Narmada–Son and West Coast tectonic zone have been studied for their field, petrological and geochemical aspects and these also need to



Koknere hot spring.

be incorporated in the next edition. The chapter on Deccan Traps is made interesting by inclusion of a good description of the world famous Lonar crater, the only hypervelocity impact crater in a basaltic province.

In the chapter on Tertiary–Quaternary of Maharashtra, the emphasis is on explaining the 1.5 million year long hiatus or lack of sedimentation during the early Tertiary. According to the authors, the period is marked by widespread Earth movements that are responsible for the development of a major part of the physiographic features in western Maharashtra, especially along the Sahyadris. The description on the occurrence of laterites along the Sahyadri crest and Konkan plain is informative. Fair descriptions of the older and younger alluvium in the Tapi–Purna, Godavari, Wardha, Penganga and Wainganga basins are also included. The preliminary information on the volcanic ash at Bori in the Kukdi river basin is fascinating, but its relation to the Toba eruption could have further enriched its value. A small section on the Quaternary sands and beachrock deposits along the Konkan coastline that has important bearing on sea-level fluctuation, salt-water intrusion and placer deposits may also be included in the next edition.

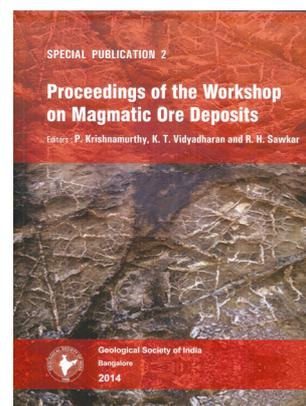
The compilation on the mineral resources of Maharashtra is one of the best available for the state and is an important chapter in the book. It includes some important occurrences and reserves of metallic (e.g. manganese, iron, chromite, gold, etc.) and non-metallic deposits (barite, bauxite, clays, etc.) in the state. The authors have also included crucial information on fossil-fuel occurrences like coal, lignite, oil and gas, coal-bed methane and shale gas. The summary on the geothermal potential of Maharashtra that deals with important aspects like occurrence, discharge and hydrogeochemistry of hot springs from the West Coast geothermal field is scholarly and invaluable. Its inclusion has enriched the utility of the book. This chapter thus sets the tone towards natural resources management and energy potential of the state, two issues that will prove critical in the near future.

The authors through their mastery, dedication and passion have painstakingly researched and compiled a commendable textbook on the geology of Maharashtra, for which they need to be

congratulated. This standard textbook has all the ingredients to satisfy the needs of undergraduate and postgraduate students studying geology and will appeal to researchers as a ready reference on the subject. A good bargain, the book must occupy a prominent place in departmental libraries and personal collections. It should be increasingly used in class while teaching subjects like stratigraphy, economic geology and mineral deposits of Maharashtra. We, the faculty, professionals and students of geology in Maharashtra are grateful to the authors for providing an excellent overview of the Geology of Maharashtra.

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**Proceedings of the Workshop on Magmatic Ore Deposits.** P. Krishnamurthy, K. T. Vidyadharan and R. H. Sawkar (eds). Special Publication No. 2, Geological Society of India, Post Box No. 1922, Gavipuram P.O., Bangalore 560 019. 2014. x + 230 pp. Price: Rs 1500.

Magmatic ore deposits form within igneous rocks or along their contacts in which ore minerals are crystallized from a melt or were transported in a melt. Some of the important magmatic deposits are hosted by mafic and ultramafic rocks. These include chromite deposits, nickel–copper (Ni–Cu) deposits and platinum group of elements (PGE). While the chromite and nickel–copper deposits play a vital role in metal industry, the PGE are crucial in the