BOOK REVIEW

THE MAKING OF INDIA – GEODYNAMIC EVOLUTION by K.S. Valdiya. Macmillan Publishers India Ltd., 2010; 816p.; Price: Rs.242.

Seldom does one come across a title in Earth Sciences that catches the eye and this book *"The Making of India - Geodynamic Evolution"* written by Professor K.S. Valdiya belongs to that category. It is written with an undergraduate student in mind, who is interested in an up-to-date account of the Geology of India.

The book has 27 chapters that cover all aspects of Indian Geology – from the physiographic divisions of India to Holocene tectonic movements through Archaean geology, Proterozoic mobile belts, description of Meso- and Neoproterozoic intracratonic basins, Himalayan Geology, Phanerozoic sedimentation, magmatism, volcanism and tectonics. The book has several maps. Amongst many others, these include, schematic map of geological terranes of the Indian continent, Bouguer anomaly map of India (Plate II), map of Archaean age cratonic blocks, map showing convergence of India and Asia, map showing velocities measured using GPS, generalized tectonic map of India and epicenter distribution map of earthquakes in India (Plate IV). These maps are a storehouse of information and are expected to provide the reader, particularly the young student, latest geological information about any terrane of India.

Description of each terrane comprises an account of stratigraphy, sedimentation, deformational pattern, fold history, magmatism, metamorphism, mineralization and tectonic evolutionary model. Available Bouguer gravity maps, DSS profiles, geological maps, geological cross-sections (profiles), block diagrams and finally tectonic and geodynamic model/s for the evolution of the area are presented for each terrane. P-T paths that help correlate metamorphism with regional tectonics are presented for different areas - e.g., parts of Banded Gneissic Complex of the Aravalli region, Eastern Ghats Mobile Belt, Southern Granulite Terrane. The book provides an un-biased account of the existing knowledge about Indian Geology. For e.g. the section entitled *"Tectonics of Evolution of Dharwar Craton"* (p. 50-53) comprises a compilation of models postulated by various earth scientists who investigated the Dharwar craton between 1986-2003 (see p. 52 of the book for references).

"Cretaceous Volcanism" is described in a separate chapter giving magnetostratigraphic details, description of mode of emplacement of Ambadongar carbonatite and radiometric dates of the Deccan lavas presented on a geomagnetic polarity time scale along with several maps and cross sections. The book also makes easy reading for a person interested in stratigraphy and paleontological aspects. Several lithostratigraphic columns and lithologs are presented and are compared with similar successions of different areas, thus providing useful information about correlations between rocks in different parts of India. Amongst others, these include lithostratigraphic columns of the Palaeoproterozoic successions in Rajasthan, Madhya Pradesh, Jharkhand and Chattisgarh, lithologs of different parts of the Purana basins, lithostratigraphic columns of the Gondwana succession and lithological succession of Tertiary formations of the Kachchh, Cambay, Bombay Offshore and Krishna-Godavari basins. *"Life"* in different geological times in different parts of India has been described for each terrane, starting from the mention of *"prokaryotes"* in the Archaean time (p. 52) to the *"The Coming of Man"* in the Quaternary time (p. 595).

During his long academic career, Professor Valdiya has made seminal contributions to the enhancement of our knowledge of Himalayan Geology and the study of Quaternary tectonics in India. This is well reflected in the book with several chapters dedicated to the above two aspects. India-Asia collision, the emergence and evolution of the Himalaya and the Himalayan foreland basin are discussed at length. Aspects of Quaternary geology of Peninsular India and Himalaya are dealt in separate chapters. Seismicity in different parts of India, the build-up of strain due to movement of the Indian plate, uplift of the Tibetan plateau are all discussed in a chapter entitled *"Holocene Tectonic Movements and Earthquakes"*.

Geology of the Indian subcontinent, with water on its three sides, cannot be complete without the geological information of what lies beneath the Indian Ocean, Bay of Bengal and the Arabian Sea. The penultimate chapter provides this information covering aspects related to Ninetyeast Ridge, Carlsberg Ridge, Bengal Fan, Indus Fan etc. Moreover, sea-level change, seismicity along mid-oceanic ridges and mineral assets such as gas hydrates,

placer deposits, ferromanganese nodules etc. also find a mention in this chapter. The book ends with a chapter entitled "*The Evolving Indian Continent*", which spans from page 650-679. These 30 pages summarize the writing that is included in the previous 649 pages of the book, which beyond doubt, is a magnificent effort.

As mentioned in the *"Preface"*, Professor Valdiya has preferred to use the works of earth scientists who *"explored the land of India"* after 1947 (post-Independence era). As a consequence, the book automatically provides up-to-date account of Indian Geology and geodynamical models proposed by various earth scientists to explain the tectonic evolution of different terranes of India. With the references spanning over 122 pages, the reader can consider himself/herself blessed to have all the modern literature compiled under a single "umbrella". True to George Orwell's quote "*Never use a foreign phrase, a scientific term or a jargon word if you can think of an everyday English equivalent"*, Professor Valdiya has written the book in lucid and simple English, which every Geology student, including the non-native English speaker, will be able to follow. Each chapter has several subheadings dealing with a specific topic, which allows the reader to directly go to the page of his/her interest. The figures are of a very high quality and at a price of Rs. 242, the book is surely affordable by every student of Geology in India and elsewhere, who wants a complete account of *"The Making of India"*. The book is a *"Must Buy"* and a *"Must Read"* for every Indian earth scientist.

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