

## Book Reviews

**LITHOSPHERE: Structure, Dynamics and Evolution.** Special issue. A volume in honour of Hari Narain. S. M. Naqvi, Harsh K. Gupta and S. Balakrishna (Editors). *Tectonophysics*. Vol. 105, Nos. 1-4. pp. 1-418.

This is a special issue on Lithosphere brought out by *Tectonophysics* in honour of Dr. Hari Narain, the well-known Director of the National Geophysical Research Institute, on his 60th birthday. As stated in the appreciative note, Hari Narain is 'one of the most successful science managers in India and an able architect of a great institute for geoscientific research.'

This volume of papers, largely written by admirers of Hari Narain, both within and outside India, contain a spectrum of papers dealing with the structure, dynamics and evolution of the lithosphere, truly reflecting the varied interests of the person in whose honour the volume has been brought out. The volume includes 29 papers in three sections; the first group of seven papers deal with early lithospheric evolution. Contributions from the Indian shield then follow. The last group of nine papers deal with Phanerozoic processes with particular reference to the Himalayas.

The paper by K. Condie on Archaean geotherms and supracrustal assemblages will be read with particular interest by Indian geologists as it outlines in a succinct manner the difference between early Archaean supracrustals formed at the interface between tonalite islands and oceanic lithosphere and Archaean supracrustals formed in intra-continental rifts over mantle plumes. The diachronous and transitional nature of the Archaean-Proterozoic boundary is the topic discussed by B. F. Windley in another interesting paper. J. J. W. Rogers has traced the evolution of continents from ocean basins through development of greenstone belts, island arcs and marginal basins. He envisages a continual enrichment of lithophile elements into upper mantle source regions from which continental crust is extracted. S. Bhattacharjee and R. N. Singh have concentrated on thermal events responsible for the evolution of the Cuddapah basin. Present status of geochronology of the Precambrian of Rajasthan is reviewed by A. K. Chowdhary, K. Gopalan and C. A. Sastry. New Rb-Sr ages are provided and five periods of acid magmatism have been identified. Existing gravity data on the Indian shield is reviewed by R. K. Verma and C. Subrahmanyam. Evolution of the Singhbhum granitic complex representing an old segment of Archaean crust of India has been traced by A. K. Saha and S. L. Ray.

Other interesting papers included in the volume which will be of interest to readers in India are the review papers by E. Grew dealing with Antarctic granulite facies rocks and Archaean crustal evolution in southern Greenland by B. Chadwick and K. Coe.

A second group of papers deal with description of Phanerozoic events. Evolution of the lithosphere of Pakistan by A. Farah and others; Evolution of the Himalaya by K. S. Valdiya; Elements of continental subduction along the Himalayan front by L. Seebe and J. B. Armbruster; Tectonic segmentation of the Burmese-Indonesian arc; Surface heat flow and probable evolution of Deccan Volcanism by M. L. Gupta and V. K. Gaur are of special interest. Klootwijk has presented a useful review of Phanerozoic Paleomagnetic data with several interesting APW paths for India and Pakistan.

On the whole, the volume is a good collection of interesting papers dealing generally with India on geological and geophysical aspects which were fields of special interest to Dr. Hari Narain. He is sure to be remembered for the role he played, in promoting collaborative research in India. It is good to see that such a

prestigious journal like *Tectonophysics* has come forward, for the first time, to bring a commemoration volume in honour of an Indian geoscientist. The authors of this well edited volume deserve to be congratulated for focussing the attention of the Earth Science community on problems of the Indian shield.

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PRINCIPLES OF LAKE SEDIMENTOLOGY. By L. Hakanson and M. Jansson,  
Publisher : Springer-Verlag 1983 pp. 316, price US \$ 38.10.

During recent years, multidisciplinary studies on lake systems is gaining importance and a number of interesting papers have been published on different aspects. The book 'Principles of Lake Sedimentology' emphasizes the principles and processes of lake sedimentation and can form a basic guide to research.

The book starts with a prologue in which a review of existing literature in related topics has been attempted. Chapter 2, deals with the classification of lakes and sediment types in detail and the authors have established a relation between lake types and sediment types. Chapter 3 deals with various sampling techniques - their advantages and disadvantages. This is a very well written chapter and is a useful guide for sampling procedures to be adopted in different lake types. There is also a detailed discussion on sediment traps which clarifies several physical aspects of sedimentation in vessels. Chapter 4 on physical and chemical sediment parameters describes fundamentals in a simple way and is well illustrated.

In the fifth chapter on biological parameters, the authors have focussed on the main groups of benthic life in sediments and their role in relation to ecosystems of lakes.

The sixth chapter deals with the physical aspects of sedimentation in lakes, the rates of deposition and temporal variations. A separate chapter has been devoted to lake bottom dynamics which is an important aspect in sedimentological study.

Eighth chapter of the book gives an idea about the internal structures and bioturbation in sediments. The authors have also successfully attempted a modelling of bioturbation and biotransport and have also discussed problems related to the age of sediments. Aspects dealt in chapters 7 and 8 have earlier been covered in another text book by the senior author (Hakanson, 1981).

The role of sediments in aquatic pollution control programmes forms the last chapter.

An Appendix containing Computer programmes for determination of biotransport, time stratification and sediment composition will be useful for workers in this field. The references are exhaustive.

The authors of this book have concentrated mainly on the Swedish and Scandinavian lakes, they should have given some results on sedimentological aspects of the saline lakes (Eugster and Hardie, 1978) many of which are important from economic point of view. Although there are a few good books on lake geology, a comprehensive text covering all aspects was not available. The present book fills this gap. It is one of the best publications on lake sedimentology. The book should appeal to a wide range of researchers and students.

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