own in a laboratory in Paris. There he found that cells could multiply till about a 100 in sulfanilamide before they were inhibited. He says, 'Not being a good biochemist, I failed to see the implications of this finding […]. This could have led me to explain the mode of action of sulfonamides, a discovery made a year later by the British biochemist D. D. Woods. It was the first – not last – lost opportunity in my scientific career. It is a risk that faces the naïve scientist venturing into a new field without the required knowledge of the background.' Reading this, we were filled with enthusiasm as well as trepidation. It showed us how easy it is to make a discovery as well as to miss one. It taught us that one must forever be asking questions and never take anything for granted. According to Luria, 'One defines a problem that seems significant in its implications and worth exploring; then one looks for a system […] that offers a promising point of attack'.

Another unforgettable piece of advice is his description of 'Beadle and Tatum's work' on gene control of organism traits. Beadle had earlier tried to tackle this question by working on the pigmentation in the eyes of fruit flies. The problem proved too difficult, so he used common bread mould, *Neurospora*. 'Beadle's shift to bread mold – which incidentally illustrates the opportunism of scientific research, shifting from one material to another in pursuit of the solution of a general problem – was an astute and brilliant move.' In this simple example, he has competently explained the essence of the unity of living organisms.

Apart from research, we learn about politics, literature, art, science, ethics, religion and so much more from this book. Luria maintains a clever balance between modesty and self-esteem. His clear ardour for science can be seen in every other thing. One interesting statement was 'The world of science may be the only participatory democracy'.

An admirable fact about Luria – from the beginning, he foresaw the integration of disciplines. He speaks often of the usefulness of the analytical view of a physicist in biology and the vital need for chemistry in biochemistry. In fact, he was the one who made James Watson (co-discoverer of the DNA structure with Francis Crick) study biochemistry.

Luria, in his life, met and befriended a large number of great minds which are held in such esteem today. His descriptions of them are quite refreshing and unexpected. It was pleasant to read these personal tidbits about such revered men and women. He spoke his mind in every page, whether his thoughts were controversial, biased or irreverent. For example Luria says, 'I have a nasty suspicion that a good deal of traditional subject matter is kept in textbooks because it provides […] quiz questions'. He himself maintained a singular dislike towards mugging throughout his life.

His book is an honest and unbiased exploration of himself. It gives many insights to various aspects of life, and is definitely a must read. The reverence with which he speaks of science and his colleagues is inspiring. Reading this book, it feels like we actually get to know Luria. He ceases to be a 'Nobel Prize-winner' and rather becomes an admirable man who has much to teach us about life.

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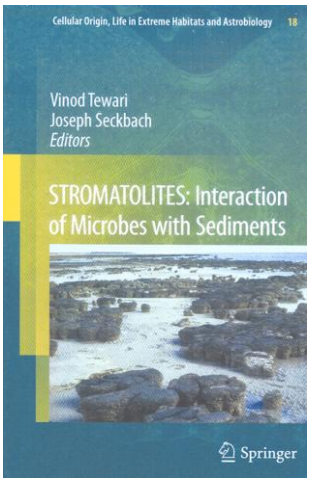


Stromatolites: Interaction of Microbes with Sediments. Vinod Tewari and Joseph Seckbach (eds). Springer, Dordrecht. 2011. xxix + 751 pp. Price not mentioned.

Stromatolites are the first biogenic structures produced on the Earth around 3.5 billion years ago. They are in the true sense trace fossils whose presence simply confirms the interaction of microbial life with sediments. They are abundantly recorded in the Precambrian deposits with varied morphologies ranging in size from microscopic dimensions to the size measurable in metres. Stromatolites acquired varied shapes from bedded to columnar, attached or unattached, domal or flat. In the Precambrian eon some of the stromatolite forms acquired unique morphologies which are restricted in a specific time-frame and thus appear as time-controlled. This lead to their use, quite successfully in many cases, for intrabasinal and interbasinal correlations. In spite of enormous work done on the stromatolites since more than a 100 years, particularly in the last few decades, there are many aspects which are still not understood, especially the variation of morphologies in the Precambrian stromatolites, as these morphologies are not reported in the Phanerozoic as well as in the modern environmental setting. The early evolution in the microbial community must have influenced the stromatolite morphologies, which needs to be identified. There is a good possibility for the search of microbial community in the black-bedded cherts associated with the stromatolites which produced them. In the light of this, the book under review is a welcome addition to our understanding about stromatolites of both modern environmental setting and fossil records. The book is a collection of papers covering different aspects of stromatolite formation, with contributions from 84 experts from 27 countries. The editors have been successful in soliciting 34 research papers on various topics. The last chapter is written by the editors themselves giving a summary and conclusions. They have also given their views in the context of the emerging branch of astrobiology.

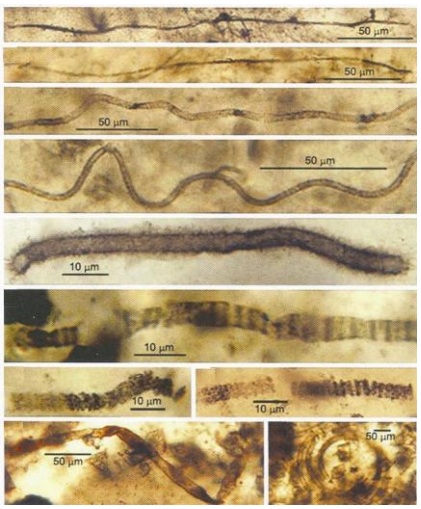
The book has been subdivided into seven parts. The first part covers Archean–Proterozoic stromatolites and microbiota. This includes seven research papers, out of which two are from India. Only one paper by Sugitani *et al*. deals with Archean microfossils from the Pilbara craton, western Australia which suggests early evolution of a diverse and complex ecosystem in a shallow-water environment in the Archean. The paper is an important contribution in the light of the fact that Archean fossils are rare and invariably poorly preserved with skepti-

cal biogenicity. It definitely helps in the identification of putative fossils.

The Phanerozoic stromatolites are covered under Part 2. It includes five papers covering mostly Mesozoic stromatolites. Part 2 is important as good papers dealing with Phanerozoic stromatolites rare and invariably attract little attention.

Part 3 deals with different aspects of modern stromatolites which are growing in different environmental settings like marine, lacustrine and hot springs. Among the seven papers, here, two deal with unusual environmental settings, one deals with an unusual ecosystem of the modern stromatolites of alkaline and hypersaline high-altitude lakes of Argentina and another is on the terrestrial siliceous stromatolites. The paper by Farías *et al*. on Argentina's lake environment compares the high-altitude lake environment with the envisaged environment of early Earth. This paper can open up new windows for understanding early evolution of life. Another paper by Handley and Campbell discusses the importance of terrestrial siliceous stromatolites from geothermal setting.

Part 4 has three papers on the techniques used in the study of stromatolites and microbiota. These include the latest available techniques like micro-FTIR spectroscopic imaging, nano SIMS and laser Raman spectroscopy. Thus, a much expanded overview is available for the study of stromatolites and microbiota. Tewari has used some of these techniques for the study of Buxa Formation of the Sikkim Himalaya.



Optical photomicrographs showing filamentous chert-permineralized microfossils in petrographic thin section of the Proterozoic Buxa Formation of the Ranjit Window, Sikkim, northeastern India.

The maximum number of papers (nine) are included in Part 5, dealing with geochemistry and geomicrobiology. Out of these, two papers deal with the material from India. Baskar *et al.* have worked on the cave geomicrobiology of Indian caves and present a status report. Lokho and Tewari describe the biostratigraphy, sedimentation and chemostratigraphy of the Tertiary Neotethys sediments from the NE Himalaya, India. This work does not fit into the theme of the book and should not have been included.

Part 6 has only two papers; one gives some points for the search of life on Mars and the second deals with sulphur isotope analysis for understanding the early history of our Earth. Part 7 summarizes the work given in the book, with remarks for future prospects.

The book is a commendable effort by the editors in spite of some editorial negligence. Some papers have abstracts, but many do not have any. There should have been a uniformity in formatting. It is a useful book for research scholars dealing with sedimentology, early life, microbial mats and biogeochemistry. The price of the book has not been mentioned. I trust it is not too high to discourage students from owning the book.

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Towards Conservation and Management of Mangrove Ecosystems in India. J. R. Bhatt, D. J. Macintosh, T. S. Nayar, C. N. Pandey and B. P. Nilaratna (eds). International Union for Conservation of Nature and Natural Resources, New Delhi. 2011. ISBN 978-2-8317-1263-5.

Mangroves are remarkable ecosystems that thrive in the transitional zones between the land and the oceans. The importance of mangroves is rarely recognized. In India, its importance was realized for the first time during the super cyclone in Odisha and the 2004 tsunami. Mangroves act as a bio-shield to protect the human settlements, agriculture, livestock and coastal infrastructure from the impacts of cyclones, hurricanes, seawater intrusions, etc. Climate change will further enhance the importance of mangroves as an adaptation strategy to cope with its adverse impacts such as sea-level rise, salt-water intrusion, cyclones and hurricanes.

In India, there is little research on mangrove ecosystems. Till recently, the extent and spread of mangroves was not known. The mangroves are subjected to degradation and loss threatening the coastal ecosystems. In India, the focus of mangrove research and conservation is largely on the Sundarbans. The monograph edited by Bhatt *et al.* and published by IUCN is an excellent compilation of several articles by well known experts, conservationists and administrators managing the mangroves. The monograph covers all aspects of mangrove ecosystems in India. It presents an excellent analysis of the extent of mangroves, the trends, and biodiversity status of mangroves, review of the research on them, threats contributing to loss of mangroves, conservation and restoration efforts, the government policies, programmes and regulations on coastal zone management and impact of climate change.

Some of the chapters (Biodiversity of mangrove ecosystems in India, Review of mangrove species in India) are well written and some merely report the conservation and restoration programmes implemented in different states of India. In fact, the state-level conservation and restoration programmes could have all been combined into a single chapter highlighting the achievements made so far, the threats and the barriers to conservation and restoration of mangroves. There is adequate coverage of mangroves of the Sundarbans with two chapters dedicated to description of the Sunderbans ecosystem and biodiversity, and conservation and management of Sundarbans Biosphere Reserve.

The chapter on impact of climate change on marine ecosystems of India is a bit outdated. It provides information on climate-change projections and impacts based on outdated literature. A lot of new literature is available on projections of climate change and its impact on marine ecosystems and mangroves. This chapter could have covered various aspects of climate change and mangroves in the context of mitigation and adaptation to