**PROCEEDINGS VOLUME OF THE NATIONAL SEMINAR COMMEMORATING DR. M.S. KRISHNAN BIRTH CENTENARY**, Geological Survey of India, Special Publication No.55, Kolkata, 2000, 382p.; Price: Rs.380, US $21.00.

This volume is a transcript of the seminar held at GSI, Kolkata on "50 years progress in Precambrian Geology of India" in November, 1998. This volume with 22 papers has many strengths. Not least its easy prose that informs, imparts understanding and moves the reader elegantly through the complex and wide-ranging enterprise that is Precambrian geology of Indian Peninsula and the Himalaya. A list of what is in the six sections gives an idea of the scope of the volume. However, in asking big questions, it is also important to recognize the need for the details. And someone needs to supply the building blocks of our understanding. In this multi-author, research contribution, it is aimed to provide some basics and an update on the Precambrian geology of India in general and evolution of Precambrian rocks from northeast, the Himalaya, the southern, the eastern, the western and the central India, in particular. This is a timely collection of papers that deals with the growing significance of evolution of Precambrian rocks, their impact on supercontinent tectonics and mineralization for sustainable development and a fitting tribute to late Dr. M.S. Krishnan on his birth centenary.

The first paper by B.K. Chakraborty gives a very comprehensive picture of Precambrian geology of India. The discussions on various Precambrian provinces/crustal blocks of India are balanced and impressive. In the next paper by T.M. Mahadevan, a difficult objective has been accomplished without sacrificing the rigour with which the central concept is presented on how far the chemical and thermal evolution of mantle influences the lithospheric evolution. The article by A.N. Sarkar is devoted to more traditional tectonic classification of the Indian Peninsular Shield. In light of the conceptual changes and the expanding tectonic database over the years, Sarkar has also attempted a new scheme for geological ensemble of the shield. Recognition of Precambrian elements within the Phanerozoic orogenic belts has vital significance in understanding the evolutionary history of younger orogenic belts. Precambrian metamorphism, magmatism and tectonic events in the Himalayan region is the subject of the next paper by Arabinda Ghosh. Succeeding article by O.N. Bhargava summarizes the Precambrian sequences in Jammu and Kashmir, Himachal and Uttar Pradesh sectors of western Himalaya that portray different deformational patterns and varying degrees of metamorphism. Analysis of the culmination structures in eastern Himalayan Frontal Belt, the subject of a paper by Sumit Kumar Ray, has potential in identifying sectors where structural setting is favourable for hydrocarbon accumulation. Last paper in section II by B.P. Bhattacharya and T. Ray Barman briefly describes the less well known Precambrian rocks of Meghalaya. The distribution of alkali plutons and carbonates from southern and eastern Indian has been critically reviewed by S.K. Mazumdar, T.K. Rao and N.P. Nathan and is accompanied by richly documented geological maps. Another paper by V. Ram Mohan et al. is concerned with the occurrence of the ultramafic bodies in Tamil Nadu and potential information they provide on the nature of upper mantle.

Geological and evolutionary events across the Precambrian-Cambrian boundary mark the most conspicuous turning point in the earth's history during which major invertebrate phyla appeared and major transgressions took place. With this in view, Gururaja et al. have reported paleontological and biostratigraphical record from Cuddapah basin that require further high resolution isotopic data. The next paper by Moitra et al. is a succinct review of the chronological status of *Chauria-Tawuia* mega fossil assemblage from the Bhima basin. Metallogenic history of any region forms a part of the history of its crustal evolution. S.C. Sarkar has effectively introduced the reader to crustal evolution and metallogeny in the Eastern Indian craton. Reference to recent literature provides ample opportunity for the reader to follow up special interests. In a concise review on the north Singhbhum Proterozoic mobile belt, Anupendu Gupta and Anirudha Basu have very well organized the material. Their overview is aimed to provide a critical assessment of mobile belt features with supporting evidence for the arguments that are presented, including different tectonic models that explain the evolution of NSMB. A good review by M.K. Bose considers the key issues related to the mafic-ultramafic magmatism in the eastern Indian craton. The author has managed well to draw on many aspects of Singhbhum craton to illuminate its evolution with respect to available geochronology, REE chemistry of mafic-ultramafic association. The last paper in Section IV by S. Dasgupta and P. Sengupta provides an interesting discourse on the tectonothermal evolution of the Eastern Ghats Granulite Belt that is completely up to

date in data and ideas. While describing the metamorphic perspective of the UHT rocks from EGGB, the authors know where to leave the questions unanswered. They provide a meaningful insight on the evolution of deep crustal rocks experiencing UHT metamorphism and their global impact in resolving supercontinent puzzle. S. Sinha-Roy describes in easy-to-follow fashion the Precambrian terrain evolution in Rajasthan. Aided by the power of the deep seismic reflection profiles, the author has interpreted the frozen Proterozoic deep crustal structures of Rajasthan terrain that fall in line with the proposed plate tectonic model. A note on the geology of the Delhi Supergroup in space and time has been provided by P. Gupta and U. Bose. Fareedudin presents isotopic constraints on the Precambrian poly-metamorphic terrains of Rajasthan and their tectono-metamorphic evolution emerging within the framework of Grenvillian orogeny and Pan-African event. On the other hand, Bhushan has touched upon the Neoproterozoic magmatism of the Malani igneous suite from Western Rajasthan. It is not amazing that the Aravalli-Delhi orogenic belt, forming a part of the northwestern Indian Shield has the largest repositories of Pb-Zn, phosphorite and evaporite minerals in the country. There is a great deal of emphasis by M.K. Deb on the different metal deposits from this shield and their metallogenesis in the background of a viable crustal evolution model. In the concluding section, D.J. Dasgupta places greater confidence on the strength of the satellite imagery, ground observations, computer software coupled with GIS to critically analyze and explore the Pb-Zn mineralization in BGC of Western Indian Craton. The only paper in Section VI by A. Roy et al. enumerates the present state of knowledge of supracrustal belts and the associated gneiss-granitoid terrains in relation to crustal evolution during Precambrian times in the Central Indian Shield.

Illustrative diagrams are used throughout the text and there is also scattering of black and white photographs; all are clear and the absence of colour does not seem to limit their effectiveness. Its wider coverage makes the volume a valuable stepping stone to a more in-depth study. Many contributions are packed with a wealth of historical and contemporary information that make this volume delightful to read. The ample merit of this volume should ensure its place on the bookshelves of the university libraries and on the desks of researchers and teachers. The volume is available in the library of the Geological Society of India for reference purposes.

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## ROLE OF EARTH SCIENCES IN INTEGRATED DEVELOPMENT AND RELATED SOCIETAL ISSUES. Geological Survey of India, Special Publication No.65, Volumes I, II and III, Kolkata, 2001; 773p; Price Rs.305/-; US$ 17, £11.60.

Encompassing special lectures delivered and papers presented at the National Symposium organized by the Geological Survey of India (GSI) at Lucknow (November 2 to 4, 2001), to commemorate the 150th anniversary of the Geological Survey of India, the three volume publication brings out very useful material that environmentalists, engineers, local planners and administrators are seeking keenly. The three volumes appear to be the sequel to, and patterned after, another GSI publication – *Contributions in Environmental Geology*, Special Publication No.43, 1996. The 1996 and 2001 publications complement each other.

There are seven invited papers on some aspects of environmental geology, covering themes on which already much has been written (by the authors themselves in a couple of cases). The erudite paper on the palaeoenvironmental assessment of central Narmada valley brings out some facts of crucial interest, including the appearance of man in the Indian subcontinent.

The 133 papers that make up the volumes, cover the following subjects: (i) environmental impact, (ii) geoenvironment in urban and rural development, (iii) hazards of mining and radioactive waste disposal, (iv) geohazards (cyclone, flood, mass-wasting, earthquake, desertification, land degradation), (v) assessment risks of pollutions of water and air, (vi) snow, ice and glaciers – impacts, climate and hazards, (vii) sedimentation, landuse and palaeoenvironment in the Quaternary period,