

**INSIGHTS INTO INDIA'S MINERAL WEALTH: Prof. Calamur Mahadevan Commemorative Volume). Dr. P.S.N. Murthy and V.V. Nageswara Rao (Eds). Journal of Economic Geology & Georesource Management, Special Volume 10, April, 2015, 252p., South Association of Economic Geologists (SAAEG).**

In tune with the title, this Special Volume deals with research articles on most of the minerals that India has been known for in the world. The very first paper is on chromite followed by several articles on BIF and iron ore, copper, mineral sands, ball clay, fluor-Apatite, gold, diamond and gem stones. There are a few articles on geostatistics. The papers published in this volume were presented and deliberated at the National Symposium on *Challenges of Mineral Development for Sustainable growth of India's Mineral-based industries with emphasis on Iron and Steel sector* organized jointly by the Visakhapatnam/Andhra Pradesh Chapter of the Association of Economic Geologists and Department of Geology, Andhra University. The volume is very ably edited by P.S.N. Murthy and V.V. Nageswara Rao both of whom took the lead in convening the National Symposium.

B.B.G. Sarma, a student of Prof. Mahadevan, has written an outstanding tribute to his late Professor. He describes Prof. Mahadevan as a *'Geologist par excellence, person of high calibre, zeal endowed with scientific temperament, a tenacious person with tremendous capacity for hard work, great leader at organization, abundant dynamism, a matchless visionary and above all a great humanist'*.

Who does not know Prof. C. Leelanandam! The very first article on 'Kondapalli Layered Complex (KLC)' is authored by him. The KLC was discovered by Leelanandam in 1972. The article deals with petromineralogical and geochemical aspects and concludes that the KLC was emplaced in an Andean-type "continental magmatic arc" environment and, the chromite-bearing ultramafics form a part of the Mesoproterozoic arc-root complex. The next article by S. Acharya is on the ore deposits of iron ore Supergroup of north Odisha. Acharya concludes that the geological studies of the iron ore Supergroup has "resulted in a new vista for resource exploration and set up a paradigm for the industry". P.S.N. Murthy, has contributed six articles which cover a range of subjects from geological, geochemical and genetic aspects of BIF of Donimalai/Sandur Schist Belt and microbiota and their role in the origin of BIF. Murthy and A.K. Chatterjee have proposed a new model for the origin of banding in BIFs, primary or secondary? P.S.N. Murthy's paper with K.V. Rao is worthy of a special mention here because they have drawn attention to the availability of vast deposits of banded magnetite and hematite chert/jasper in India and suggested for evolving a cost effective beneficiation process for industrial utilisation of these vast resources. Abdul Matin and D. Mukhopadhyay have very ably described the small scale folds in Sandur schist belt and have emphasized on the importance of these folds in working out the 3D geometry of iron ore bodies which in turn is essential for an accurate estimation of the Mineral Resources of the belt. Vinod K. Singh and Alexander Slabunov have dealt with geochemical characteristics of BIF and associated metavolcanics of Babina Greenstone Belt (BGB), Bundelkhand craton. They conclude that the BGB was formed by subduction-accretion processes during Neoproterozoic time. B.L. Narasiah has explained the salient features of the Chromite-Magnetite-Fluor-Apatite Mineralization from parts of Eastern Ghats and inferred on geochemical grounds the EGMB's potential for PGE and REE mineralization. I.V. Radhakrishna Murthy has attempted an assessment of the magnetic geophysical method of exploration for chromite deposits, with case studies. He has concluded that the magnetometer was successful in detecting chromite bodies in 3 different geological environments namely; (a) stand-alone chromite ore bodies, (b) chromite associated with zones of serpentinization, (c) where the ore and host rocks are randomly and unevenly magnetized.

The method was unsuccessful where both the ore and host rocks are equally non-magnetic. Prabhakar Sangurmath has presented a well illustrated detailed account of the geology and gold mineralization at Mangalur gold mine in Yadgir district, Karnataka and has recommended for taking up Mangalur (Mukangavi) Mine and Jainapur Block for detailed drilling and exploratory mining in view of the distinct possibility of defining high grade ore shoots and payable zones. M.K. Shukla has described in detail the geology, structural controls of copper mineralization and the evolution of the Khetri Copper belt (KCB). Shukla is of the opinion that the geology of KCB being favourable, a continuous programme of exploration is likely to result in economically viable resources in the future. Arijit Bagchi and co-authors have very ably reviewed the whole gamut of exploration, mining, concentration and separation of ilmenite, rutile, zircon, garnet and silimanite from mineral sands. R. Dhana Raju and Jagannadha Rao have presented an account of the exploration which they carried out for heavy mineral sands found along the shoreline of Lake Malawi in Central Africa. The paper is very well illustrated. The next paper is also on heavy mineral sands authored by M. Jagannadha Rao, J. Venkata Ramana, T. Karuna Karudu and P.J. Ratnakar. They have reviewed the placer ilmenites of East-Coast of India and conclude that the ilmenites of Kakinada, Bhimunipatnam and Srikrumam are more suitable for pigment manufacturing than preparation of synthetic rutile. V.V. Nageswara Rao et al. have described the mineralogical and geochemical characteristics of Ball Clay deposits of West Godavari district. Ananda Deb Mukherjee has presented a thought provoking article entitled *"Economic Geology as Harbinger of Growth in India's Mineral Industry-Today"*. Mukherjee says that *'the crying need of the hour'* is focussed-research on (a) Geodynamic setting of mineral deposit systems, (b) new insights into archaean greenstone architectures, (c) regional crustal structures and their relationship to ore deposits and (d) integrated modelling frame work for exploration. In the same breath D.P. Rao, Ex. Director of NRSA has described the role of space technology in mineral exploration and mining. He concludes that higher resolution sensors in IRS satellites support higher accuracies which, combined with microwave interferometry, satellite ranging and algorithms for detection of lineaments would provide required impetus for mineral prospecting efforts. An interesting paper about Unusual World of Oddities (unusual or odd characters such as unique inclusion patterns) in Gemstones. Shripalkumar Desai and his colleagues from Gemmological Institute of India have described Natural and Synthetic diamonds and their colour modifications. It is a well illustrated lengthy paper. There are three papers dealing with geostatistics by P.S.N. Murthy, T. Suryanarayana and V. Kameswara Rao. P.S.N. Murthy has presented a case study illustrating how to carry out Co-Kriging when multivariables are present. Kameswara Rao has dealt with domain problems in geostatistics. Murthy and Suryanarayana have struck a note of caution to professional geologists. *"Because of utilization of mathematics in geology it gives a false sense of security. If one does not understand the theory reasonably and lacks in practical knowledge of mining geology, the results will be highly misleading. One has to apply geostatistics prudently"*.

I recommend that this volume should find a place in the libraries of Universities, Geological Survey Organizations and Mineral exploration and Mining Companies.

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