BOOK REVIEW

NATIONAL SEMINAR ON GEOPHYSICAL SURVEYS IN INDIA : PROSPECT AND RETROSPECT. Special Publication No.75, Geological Survey of India, Airborne Mineral Surveys and Exploration Wing, Bangalore, Seminar Volume, February 2002, 278p. Price: Rs.175/-

This volume is a compilation of selected papers presented at a seminar organized by the Airborne Mineral Surveys and Exploration wing of the Geological Survey of India (GSI) at Bangalore during 26-27, February, 2002. It is a part of the celebrations to commemorate the 150th anniversary of the GSI. The volume contains a total of 33 papers, of which 29 are by officers of the GSI, one from Andhra University, two joint papers: one by an author from a college in Aligarh with an officer from the Directorate of Geology and Mining, Lucknow and the other by an author from Bangalore University and GSI, and a general philosophic paper by an author whose professional affiliation is not given. Therefore, most of the material presented in this volume reflects only the status, practice and the extent of the application of geophysical surveys in the Geological Survey of India in their exploration programmes and geological studies.

The selective geophysical techniques applied by the authors in different environments include Airborne surveys, Remote sensing (satellite imagery) to ground geophysical surveys with Gravity-magnetic, EM, Electrical Resistivity, SP, IP, *Mise-a-La-Masse*, Bore Hole logging, Seismology and Seismic Tomography. Ten papers cover the application of airborne surveys with follow-up ground geophysical surveys. Seven papers feature the exploration in the region of South Delhi Fold belt in Rajasthan for sulphides in the copper belts, gold-associated base metals and Zn-Pb deposits. Two papers deal with the Bundelkhand region in UP for correlation in pyrophyllite-diaspore and associated sulphide minerlisation and one in Sidhi district of Madhya Pradesh for auriferous sulphides, with ground checking by bore-hole drilling where indications of mineralisation were found.

There are three interesting papers on exploration for kimberlites and related rocks, based on the studies of the analysis of airborne magnetic maps along with, in some cases, remote sensing and radiometric data, in arriving at the structural setting of the explored regions and inferring possible potential locations of kimberlite/lamproite emplacements. The areas comprised Kandakur-Raichur-Mantralaya belt, Pavagada-Penukonda - Puttaparthi belt and Bastar craton. It is gratifying to note that the results presented included the establishment of ground truths and identification of potential locations by geochemical sampling. The paper on the case history on the Mangampeta bedded baryte deposits incorporating the new gravity data is timely and interesting. The three papers on exploration for gold in Karnataka embraced regional interpretation of airborne magnetic, radiometric and ground gravity data over the schist belts of Hutti, Chitradurga and Kolar followed by ground check surveys. The claim in one of the papers that they have used high-resolution surveys is misleading. They are only regional surveys.

One paper is on exploration for coal in Chandrapur district of Wardha valley in Maharashtra with application of gravity and magnetics and deep resistivity surveys for mapping the Barakar formation and inference of some potential areas. Another paper discusses the results of the interpretation of gravity and magnetic modelling of geological structures for emplacement of alkaline-carbonatite bodies, Three papers deal with (a) reprocessing of seismograph data, recorded at the temporary micro-earthquake stations, of the aftershocks of the Killari earthquake in peninsular India and the 1999 Chamoli earthquake in the Western Himalayas for seismic tomographic images; (b) analysing the aftershock records of the 26 January 2001Bhuj earthquake and (c) tectonic modelling of the micro earthquake records in the Sikkim-Himalaya region.

A paper on palaeomagnetic study of the flood basalts in Toranmal section in Maharashtra suggested that the dykes in the area are the possible feeders to the flood basalts. One of the papers dealt with a laboratory experiment of RF stimulation of gold-bearing minerals from Lalitpur district in UP, showing development of magneto-photo-conductivity, suggesting the future possibility of its use as a potential technique of geo-imaging process.

There are three papers on the application of geophysics in environmental studies, all dealing with salt water/brackish water incursions in ground water in Digha area in West Bengal and urban areas of Kolkata and Haora. The paper on the delineation of palaeo-channels in parts of Tamil Nadu using Hammer Seismics presents an interpretation of inferred subsurface sections correlating with the litho logs from the

well data and to the existence of possible palaeo-beds, leaves much to be desired for evaluating the results as it fails to present the details of seismic survey,.

The joint paper by the GSI and Bangalore University, a case study of the interpretation of the aeromagnetic and satellite data, is an exhaustive study bringing out the structural framework, with inferred geology map and lineaments in the North Arcot district of Tamil Nadu, presenting also the prospect map of the fractures/aquifer zones. The results will be useful only when the ground truths are established. The paper on the analysis of the aero-radioactive anomalies in the central part of Chattisgarh basin and the granitic terrain to the west of the Khairhar plateau infers high uranium concentration rates of different magnitudes, pointing to potential health hazard zones.

The paper by an author whose professional affiliation is not indicated is a general philosophic rigmarole on geophysical exploration and interpretation, without any aim or objective of what is being conveyed to practical explorers.

Overall, the volume contains useful interpreted database of geophysical surveys carried out by the GSI. Obviously this is only a fraction of the enormous quantity of geophysical survey work carried out by this pioneering scientific organisation devoted to earth sciences and other institutions in the country. Justice does not seem to have been done to that part of the title of the seminar, which refers to "Prospect and Retrospect". There should be some introspection on this.

The volume has been generally printed well except that some of the diagrams at places are not legible. It is a welcome addition to the earth science literature and deserves to be in the collection of practicing exploration geologists and geophysicists in India. The book is reasonably priced.

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PROCEEDINGS OF NATIONAL SEMINAR ON RECENT ADVANCES IN GEOLOGY OF COAL AND LIGNITE BASINS OF INDIA by A. B. Dutta, A. Mukhopadhyay, S. N. Mitra, P. K. Raha, N. C. Chakraborti, S.N.Banerjee (Eds.), Special Publication No.54, 2001, Geological Survey of India, 27, Jawaharlal Nehru Road, Kolkata - 700 016, Price: Inland Rs. 534.00, Foreign £18.00; $30.00, 364p.

Coal and lignite have been traditionally meeting about 55% of the country's total energy requirement and dominating the energy picture in India. Geological Survey of India (GSI) since 1851 and other organisations like CMPDIL, SECL, MECL and several State Directorates of Geology for last few decades have been engaged in exploration of coal and lignite. Enormous data on coal and lignite were generated by different coal laboratories of CFRI, CMRI, BSIP, ISM and other educational institutions and universities of repute. Therefore, in the year of the Golden Jubilee of India's independence, GSI has taken the lead and organized a national seminar to take stock of the latest advances in the geology of coal and lignite basins of India.

Even though, the seminar was held in Kolkata from 5th to 7th December 1997, the publication of the proceedings could come out only in 2001. The volume is a commendable effort in documenting the state of the art knowledge of coal exploration techniques, stratigraphy, palaeontology and sedimentology, tectonism and magmatism, coalification process including petrology and coal chemistry and emerging trends and prospects. The book is divided into seven sections.

In his keynote address Dr. S. K. Acharyya highlighted contributions of the GSI to the geology of coal and lignite basins of India.

In the second sections of invited papers R.S. Tiwari discusses mass extinction of plant life at the Permian-Triassic Boundary (PTB) of peninsular India. Tiwari suggests that plant life indicates a high turnover rather than a mass extinction because numerous innovations in taxa have also taken place at the stratigraphic vicinity of PTB. Several groups of spores and pollen have disappeared in a ladder pattern before the boundary and similarly in steps many new forerunners of Triassic appeared right at the end-Permian. He emphasizes on "no evidence of sudden and all out death" for plants at the PTB. N. D. Mitra's paper on "Process of coalification in Indian Gondwana basins"