

NOTES

DIVERSIFIED ACTIVITIES OF NGRI

It is gratifying to note that the National Geophysical Research Institute, Hyderabad, is progressively diversifying its activities and making an impact on fundamental studies, instrumentation and applied research. The Annual Report for the year 1990-1991 of the Institute, in the form of Extended Abstracts presents the fields of activity and the results obtained. The Appendix towards the end is a list of papers published, seminars attended, grants obtained, equipments added etc. The material is presented under three categories: (i) lithospheric studies (pp. 1-38), (ii) exploration geophysics (pp. 39-48) and (iii) environmental geophysics (pp. 49-64). Justifiably the categorisation has not been made on the basis of instruments used or methodology adopted, but on the basis of the ultimate objective. In other words, whatever tools and methods are felt to be appropriate to be used in an investigation, not necessarily always with success, have been used. In a number of investigations the need to take recourse to different types of geophysical methods, particularly where the data is beyond physical observation in the field, has been established. Some among the interesting results obtained are mentioned below:

The basement configuration has been delineated in a part of Bengal Basin (Bishnupur-Palashi-Kandi profiles (Kaila *et al.* p. 1), the thickness of Deccan Traps underlying sediments estimated in a part of South Cambay (Mehmadabad-Bill-moria profiles, Dixit and Kaila, p. 3), and a completely hidden NW-SE trending narrow Archaean Greenstone belt, beneath Kurnool sediments brought to light (Babu Rao, Fig. 52, p. 44) near Macherla in the northeastern part of Cuddapah Basin. Further evidence of filamentous microbiota has been recognised by a team (of 14 scientists) in the siderites of the Chitradurga Supracrustal belt in the Dhar-wars, the specks of carbon present in the microbiota pointing to their biological origin (Naqvi *et al.*, p. 14). Anorthosites were discovered in Samalpatti complex in northern Tamil Nadu (Mallikarjuna Rao, p. 15) and a few major ductile shear zones have been identified in the Eastern Ghats of Andhra Pradesh (Chetty Fig. 13, p. 16).

An apparent correlation seems to exist between hot spots, their tracks and arid zones, particularly in the region 20° to 30°N. Latitude (Raval and Veera-swamy, p. 8). The cause for the relatively rapid northward flight (rate?) of the Indian subcontinent is attributed to the nature of the sub-lithospheric mantle and is considered not related to thermal characteristics of the lithosphere (Gupta *et al.* p. 10).

That contemporaneous greenstone belts need not necessarily have common characteristics is shown from features studied in the Soviet Baltic and South Indian Shields (Srinivasan *et al.*, Table 2, p. 18). It is interesting to know that in southern Karnataka the charnockites in the regions of *older* granulite metamorphism of 3.0 to 2.9 Ga age do not have an imprint of *second* deformation, whereas those of *younger* generation are characterised by an imprint of second metamorphism and *third* deformation (Srinivasan and Naha, p. 20).

Magnetic anomaly studies clearly bring out the already known genetic differences among the Gooty granites on either side of a NW-SE fault (Babu Rao,

Fig. 37, p. 30). Interpretation of various geophysical anomalies over mobile belts in Peninsular India indicate that the entire region was upwarped during the Himalayan orogeny. The results also seem to indicate that the collision zone as well as the Indian continental crust have been deformed by the same forces in a parallel manner (Negi *et al.*, Fig. 41, p. 32). Some new data and fresh interpretations are presented on some of the ridges and deformed blocks in parts of Central Indian Ocean and Bay of Bengal (NGRI Group, pp. 33-36). Reservoir induced seismicity (RIS) is being studied around Koyna and Bhats dams in Maharashtra, and in Nagarjuna Sagar, Srisailem and Sriram Sagar Reservoirs. With some network established, NGRI is now in a position to locate shocks of magnitude 2 or more within about 300 km of Hyderabad (Rastogi *et al.*, pp. 52-53).

It is claimed that by hydraulic fracturing induced in the borewell at appropriate depths, low-yielding borewells for ground water could be rejuvenated (Gowd *et al.* p. 53). Soil radon as tracers has been used to locate fractures in rocks beneath soil cover (Sukhija *et al.* p. 58). The Training courses being conducted now and then on 'Geophysical Exploration for Ground water' should become a regular feature to have a significant impact.

On the whole the report presents, in brief, the major results obtained during the year. However, every effort should be made to publish as early as possible the full information on the work done (for, some of the 'abstracts' are more like 'teasers' withholding the crucial results of consequence), not only because of their theoretical value but also because of their potential for immediate applications in some areas.

R. V.

MONITORING GEOLOGICAL PROCESSES

The IUGS Advisory Board on Remote Sensing recently conducted a Workshop on Remote Sensing in Global Geoscience Processes. Selected papers presented at the workshop have been published in a Special Issue of "EPISODES", March 1992, V. 15, No. 1, 91 p. (P.O. Box 919, Herndon, VA 22070-0919, USA). The papers deal with simultaneous acquisition of high resolution image data (image spectrometry), latest use of Synthetic Aperture Radar (SAR) images in conjunction with other data sets, GIS technology in 'hazards' mapping, application of RS in the study of active volcanoes, geothermal energy etc. One of the interesting papers is an attempt to show the potentialities of measurement of subresolution terrain displacements using SPOT panchromatic imagery. This excellent publication must be perused through by everyone involved and interested in the latest applications of Remote Sensing in the study of geological processes.

R. V.

COAL ASH AS FERTILISER?

Researchers at the Faculty of Agriculture of the Hebrew University of Jerusalem have found a method of using ashes remaining from burning of coal in industrial plants, with processed agricultural waste as a highly successful, inexpensive growth medium for plants, particularly those grown in containers in greenhouses. Steps have already been taken for commercial marketing of coal ash in Israel. Prof Yona Chen heads the Israeli research team that has successfully demonstrated this use of coal ash.

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