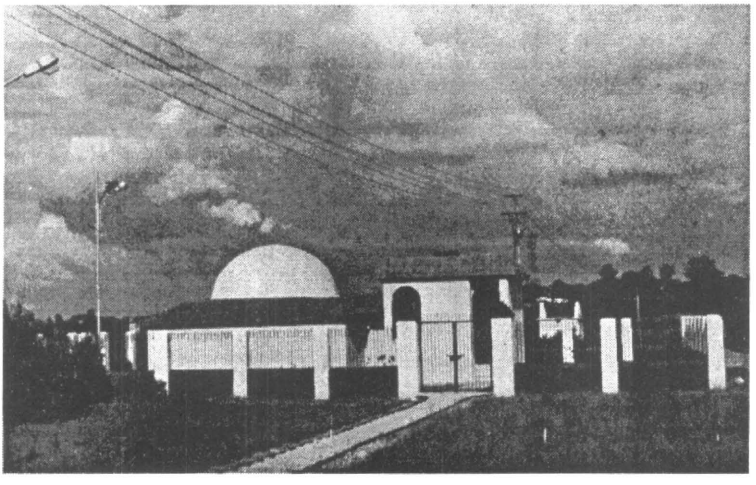
# NOTES

## THE ISM SEISMOLOGICAL OBSERVATORY, DHANBAD

A new seismological station has been set up in the campus of the Indian School of Mines, Dhanbad, with sponsorship by the Department of Science and Technology, Government of India, and with the present author as the Principal Investigator. The ISM campus is situated about 4 km north of Dhanbad railway station towards the G.T. Road. The geographic coordinates of the Dhanbad Observatory and its elevation as determined through GPS observations are: Latitude:23.875 N, Longitude: 86.444 E, altitude: 221 metres above MSL. Dhanbad is located on the metamorphic terrain of the Eastern Indian Shield, where typical basement rocks are quartzo-feldspathic gneisses containing epidote and garnet. The Dhanbad Observatory, code named as DBD, has been set up



Photograph of the Observatory

with the main objective of enhancing the earthquake detection capability for the Eastern Indian Shield and its adjacent region, in particular, for smaller magnitude shocks. It is equipped with short-period digital and analog instruments, GPS time clock with antenna, and digital data retrieving facility. The digital seismograph recorder is of 19 bit, 6 channel (model K2 of Kinemetrics, USA), whose 6 channel includes an internal triaxial Force Balance Accelerometer (FBA) (channels 1-3) and the rest for connection to three short-period seismometers (E-W, N-S and vertical components) (SS1 model of Kinemetrics). The seismometers have one second period; 5000 ohm coil resistance, and they can be operated either in horizontal or vertical mode. The PS2 Analog Seismograph has drum recording panel with adjustable record duration and drum rotation, high accuracy crystal clock, digital time display, and ink recording facility. One SS1 model Ranger Seismometer is operated in the vertical mode with Analog recorder. The instruments are installed on a specially designed "Seismic Pillar" that is firmly anchored to the underlying metamorphic basement at about 13 ft depth. The exposed metamorphic rocks near the Observatory site provide a highly favourable base for the Seismic Pillar. The Seismic Pillar is itself housed in a recently constructed Observatory building of appropriate design for effective insulation against the variations of both temperature and humidity, and also for dust control. Digital data are retrieved manually by PCMCIA

Memory Card Reader. IASPEI softwares are used for seismic data analysis of the DBD Observatory recorded data. The Analog recording is made in a separate recording room in the Observatory. The Observatory is operational since June 1998.

*Indian School of Mines*
*Dhanbad 826 004*

MANOJ MUKHOPADHYAY

## NATIONAL SEMINAR ON GEOLOGICAL ASPECTS OF ENVIRONMENT

The seminar was organised by the Centre of Advanced Study in Geology, Panjab University, Chandigarh from Feb.11 to 13, 1999. 47 abstracts were received which dealt with (i) Groundwater, (ii) Natural hazards, (iii) Mining activity, (iv) Geochemical and biogeochemical pollution of rivers and lakes and (v) Miscellaneous problems.

Under keynote address (i) V. Subramanian discussed interaction of organism with environment under natural and anthropogenic conditions, (ii) B.C. Raymahashay elaborated on the geochemical inputs in groundwater; these comprised dissolution of atmospheric mineral equilibria, redox reactions and ion exchange etc., (iii) N.S. Virdi recounted natural hazards and their management in the Himalaya.

Under special lectures (i) B.K. Das elaborated on the significance of biogeochemistry in limnological studies in the Himalaya. The carbon/nitrogen ratio was demonstrated to signify original proportion of algal and land derived material, (ii) D.K. Chadha emphasized that though at present the pollution of groundwater was confined to a few centres, the pollution and over pumping of groundwater could become a serious problem in near future, (iii) O.N. Bhargava recounted hazards of landslides, cloud burst, mining and bursting of glacial lakes in Bhutan. The study of lakes included calculation of (a) hydrostatic pressure, (b) pressure which morainic dam could withstand.

Some of the findings under groundwater studies were alarming. For example, 3601 tonnes per annum of hazardous waste was generated and discharged on open surface or in *nala* in Ludhiana. This resulted in pollution of aquifer up to 45 m depth. Locally toxic elements were 10 to 100 times more than the permissible limit (M. Mehta and S. Marwah). Nickel, chromium and cyanide were detected in sediments up to a depth of five metres (K.P. Singh and H.K. Parwanah). In Bathinda city, drinking irrigation water had become unsuitable (Baldev Singh and A.K. Jain). In Davanagere city, chloride, sodium, sulphate and phosphate showed high degree of concentration (Basavarajappa et al.). Use of agrochemicals polluted water of dug wells in Vizianagaram (G. Krishan Rao et al.).

Water logging due to canal irrigation was another hazard in 34% area of Punjab (S. Marwah and S. Mehta). Scientific reclamation of water logged area in limited portion could be achieved (H.S. Jassal et al.). Increased demand for water by the industries led to a sharp decline in groundwater of Faridabad town (M. Mehta and A.K. Bhatia). In Doab area of Punjab at the foot of the Siwalik hills, many tube wells however, got restored to original level during the monsoon (B.D. Singh and K.K. Kaushal). Tapping of groundwater in the Himalaya also came up for discussion (R. Arya).

Landslides in the Himalaya (A.K. Pachauri), geomorphological hazards in Garhwal (M.C. Sharma) and hazards related to neotectonics (S.P. Sati et al.) were discussed under natural hazards.

Study of mines in Simaur district showed that there was no environmental degradation. On contrary plantation by miners ameliorated the ecosystem (V.K. Sharma). Another study recounted