

SEMINAR ON EARTHQUAKES AND TSUNAMIS

With the objective of popularizing earth science among the school students the Geological Society of the Science College, Patna organized a seminar on "Earthquakes and Tsunamis" at the Geology Department auditorium on 5 February, 2005. Dr. S. P. Singh, formerly, Geological Survey of India, presided. About 100 senior students of Indian Public School, Hajipur, attended the seminar as special invitees.

With the help of models, charts and photographs, the earth scientists explained to the students the causes and effects of devastating earthquakes and tsunamis and the way to cope with such natural disasters. They were also made aware of the various forces operating within the earth's interior and causing different earth processes some of which are hazardous to people.

Prof. B. K. Mishra of Science College Geology Department, in his keynote address, summarized the salient aspects of the 26 December Sumatra earthquake and the devastating tsunami that followed.

With the help of coloured transparencies, Prof. Mishra explained the seismic zones of India and pointed out that the state of Bihar lying in zone IV and V is virtually sitting on a seismic time bomb. The state, which has already witnessed two major quakes in the recent past, may again be hit by an earthquake having a magnitude greater than 8 on Richter scale in near future. An awareness of these natural hazards is essential to avoid loss of human life and property. He pleaded for developing a scientific understanding of the potential earthquake zones and enforcement of the land use regulatory measures in sensitive areas.

Prof. A.K. Gupta of Patna University Geology Department discussed the mechanism of plate tectonics causing earthquakes. Prof. A.K. Rohatgi described tsunami as a geological time bomb. Dr. Atul Aditya Pandey of Science College presented details of earthquake hazards and their assessment. Noted environmentalist and professor of Zoology R.K. Sinha observed that the recent tsunami damaged a lot of aquatic animals and plants and pleaded for a detailed investigation into the colossal loss. He also pleaded for mangrove plantations in coastal areas for minimizing loss of life and property due to tsunamis.

In his presidential remarks Dr. Singh pleaded for setting up of an advanced warning system in the Indian Ocean for saving the lives of people due to tsunamis.

At the outset, Prof. N.K. Singh, President of the Geological Society of the Science College, welcomed the participants. Prof. Ramesh Shukla, Prof. Kriteswar Prasad, Prof. B. K. Thakur, Dr. Anil Kumar and Dr. Rabindra Kumar also participated in the discussion.

All the school children showed keen interest in learning the fundamentals of earth science and freely interacted with the teachers of geology department. They also visited the Geological Museum of Patna University and studied specimens of rocks, minerals and fossils on display.

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B. K. MISHRA

CONTACT COURSE ON EXPERIMENTAL STRUCTURAL GEOLOGY

A ten days DST sponsored contact course on the above topic was organized at the Department of Geology, Banaras Hindu University (BHU) Varanasi from 3-12 December, 2004. The course was attended by fifteen young scientists from different parts of the country. The inauguration of the course was held in the morning of 3rd Dec. 2004. Prof. H.B. Srivastava, course coordinator welcomed the participants and guests. Prof. R.N. Tiwari, Head Geology Department, BHU, apprised the participants about the academic achievements of the Department. Dr. K.R. Gupta, Ex-Advisor, ESS of DST inaugurated the course. In the inaugural address he stressed on the need for experimental

simulation studies with modal materials, in order to understand the processes and mechanism of deformation. The inauguration ended with a vote of thanks by Dr. (Mrs.) Meenal Mishra, Department of Geology, BHU.

The course, first of its kind, focused mainly on the current trends in the field of "Experimental Structural Geology." Almost all the Indian research workers in this field participated in the course as resource persons. The different experimental techniques employed by different groups were brought at one place and the participants were exposed to these techniques in great detail. The simulation of naturally deformed structures, from small scale to plate

scale, was demonstrated with different model materials.

It was planned to explain the basic concepts of rock deformation prior to dealing with the actual experimental work. Hence A.R. Bhattacharya dealt with the concept of mechanics of rock deformation in two presentations. The participants were encouraged to interact actively during the presentations. This was followed by lectures by D. Mukhopadhyay who discussed the concepts of stress and progressive strain in naturally deformed rocks.

K.K. Agarwal presented the sandbox analogue modeling technique and its significance in understanding the geometric and evolutionary patterns of the thrust systems in compressional regimes. Two sessions were devoted to the setting of the experiments on the specially designed rig for the course and the participants witnessed the development and propagation of thrust systems in orogenic belts. Two different settings were planned for these experiments and the details of the merits and demerits of these experiments were discussed.

H.B. Srivastava demonstrated the collision of the Indian plate with the Eurasian plate through experiments. In the experiments it was assumed that continental lithosphere is adequately represented by four layers i.e. brittle upper crust, ductile lower crust, high viscosity mantle and low viscosity mantle (asthenosphere) which are simulated by model materials like fine grained natural sands, low density silicone, high density silicone and honey respectively. In the experiments, the northern edge of the Indian continent is marked by imbricated thrust belts, are simulated with Himalaya. The two arcuate thrust belts developed in both the sides of northern part of Indian continent can be simulated with the eastern and western syntaxial bends of Himalaya. A.K. Dubey showed the experimental technique to generate single layer folds using plasticine model materials. In another experiment, he demonstrated the simultaneous development of folds, frontal ramps and transfer faults.

P.P. Roday gave a lucid account of the software used in structural geology, while A.B. Roy explained the geometric intricacies of the small-scale structures found in deformed rocks. Nibir Mandal presented a detailed account of the superposed folding and exhibited their formation using a

simple machine. The complex nature of the superposed folds was explained by the simple experiments. The utility of such experiments was also explained to the participants as these are simple and cost effective. At the end of the experiments, sections can be cut in desired orientations to expose the internal variations in the geometries thus formed. In another experiment, he demonstrated the role and behavior of rigid bodies during deformation. Manish Mamtani presented an account of rock magnetism and significance of the anisotropy of magnetic susceptibility (AMS) in deformed rocks. A detailed account of the AMS technique and strain estimation was presented.

The last session of the course was devoted to the participants who made presentations of their own research work and related problems. The continuous and regular contact among the participants and the workers in the field (the resource persons) was the hallmark of the course. Many of the participants could establish a rapport with the resource persons in order to avail the facilities available at their departments for future collaboration.

On the penultimate day of the course, a field trip was organized on the Renukoot road section ably led by V. Srivastava, covering a variety of geologically and structurally interesting sections including Chhota Nagpur Granite Complex, rocks of the Mahakoshal Group and the Vindhyan Sediments.

In the valedictory function, the participants gave their comments and their feedback. Dr. M. Prithviraj on behalf of DST, informed about the various research and development programmes of DST for Young Scientists. Prof. M.S. Srinivasan, Professor Emeritus, Banaras Hindu University distributed the certificates to the participants.

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OIL STRIKE IN RAJASTHAN

A report in Oil Asia (Jan.-March, 2005, v.25(1), p.24) announced the discovery of oil by Cairn Energy in Rajasthan in RJ-ON-90/I Block. In place estimated reserves are placed at one million barrels of oil. Daily production of crude is expected to be in the range of 80,000-100,000 barrels.