of 40 km. On the contrary, thinned continental crust (24 km) which is highly extended and underlain by a thin lithosphere is likely to be subjected to compressional collapse and thickening. It is generally agreed that igneous processes associated with extraction of material from the mantle is a major source of crustal development.

James Knapp (Cornell Univ.) talked on Tien Shan, an young intracontinental mountain in Central Asia, far from the active plate boundary. This implies transmission of plate boundary forces in the south. But the question is, why are these forces concentrated in Tien Shan? Then there is Tarim basin, a low area between Tibet and Tien Shan, which is not deformed at all. Another interesting aspect is the discovery of high rates of shortening which is greater than what is obtained from surface geology or earthquake slip rates. This might indicate either creeping processes or buildup of stresses for a large earthquake – a situation similar to what exists in the Himalaya. Another question is how the crustal shortening is accommodated in the underlying mantle lithosphere. Available evidence suggests a hot weak mantle plume under the mountain. L. Royden (MIT) talked more on this and compared the strong and weak crusts and their role in orogenesis. A strong lower crust, according to her modelling studies, will lead to strong coupling with the upper mantle. In contrast, a weak lower crust results in weak coupling.

The second day's most important talk was about dynamic topography by Michael Gurnis (Caltech). He presented a 3-D dynamic model to explain the dynamism involved in the formation of basinal depressions. His model presents time-dependent reversible depressions and elevations, based on the mantle convections, buoyancy forces and plate movement. Because of the buoyancy forces (and stresses generated by the mantle fluids), the oceanic lithosphere may sink through the mantle. For example, the areas around Philippines and Indonesia are presently depressed. Global models over different geological epochs indicate that there is correspondence with prediction and observation. Another important consequence of this study is that it probably explains some of the enigmatic unconformities that we find in the geological sequences. Does this explain the huge geoidal depression in the southern ocean floor of India?

Randell Stephenson (Vrije Univ., The Netherlands) talked about the geodynamics of intracratonic rifting. Special mention was made on the Ural mountains which is a subdued Paleozoic mountain system (maximum elevation 1800 m). Studies indicate a strong crustal root (60–65 km). Why should there be subdued mountain with a strong crustal root? Sierd Cloetingh (Vrije Univ., The Netherlands) focused on stress field, topography and origin and evolution of sedimentary basins within continental interiors. He suggested mechanical coupling plate boundary forces and plate interiors. The forces include shear traction, tectonic stresses, slab pull, ridge push, etc. The stability of the present stress field depends on the nature of interplay of surface processes, continental rheology, strength profile. The role of fluids is also important, particularly the weakening effect of fluids. He also talked about the deep KTB (Kontinentales Tiefbohr programme det Bundersepublic Deutschland) drill hole. Generally the results indicate predominant role of thermal properties on the mantle strength. In short, the continental deformation is controlled by lithospheric 'memory', stress field, dynamic topography and surface processes.

The final day was devoted to the discussion of seismicity in the plate interiors. The session was started with a presentation on intraplate stresses and seismicity by Mary Lou Zoback (USGS). In the intraplate regions we see a diffuse deformation unlike plate boundaries. Two major hypotheses concerning intraplate seismicity are, one, reactivation of pre-existing fault and two, local stress concentration. The deformation of much of the Earth's lithosphere is characteristically heterogeneous. Strain is generally focussed into faults and shear zones. Structural reactivation is a fundamental feature of deformation in the continental lithosphere. Old structures form long-lived zones of weakness that tend to repeatedly accommodate successive crustal strains often in preference to the formation of new zones of displacement.

But recent results indicate that simple reactivation and stress concentration theories are not enough to understand many cases of intraplate seismicity and its rapid recurrence in some areas. Some of the upper crustal earthquakes are better explained now by localized zones of high strain rates. Local stress perturbations are also caused by lateral variation in crustal structure, density, lithologic boundaries and stress concentrations along the edges of structures. In other words, spatial distribution of tectonic strain is highly heterogeneous in the intraplate lithosphere unlike the stress field which is uniform. In this session David Schwartz (USGS) presented results from the fault-trenching excavations from Mongolia. Roy Van Arsdale (Univ. of Memphis) suggested shorter recurrence interval for larger New Madrid earthquakes (~ 500 yr). Pradeep Talwani (Univ. of S. Carolina) suggested localized higher strain rate in the epicentral area of 1869 Charleston earthquake. I presented a seismotectonic perspective on 1993 Killari, 1819 Kachchh and 1997 Jabalpur earthquakes which occurred within the Indian shield and suggested how the magnitude and stress buildup differ in different areas within the shield, with implications for earthquake cycle in these areas.

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C. N. R. Rao honoured

Professor C. N. R. Rao, President of the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, has been elected Foreign Member of the Brazilian Academy of Sciences and Titular Member of the European Academy of Science. Professor Rao has just been invited by the University of Cambridge to be the Linnett Visiting Professor of Physical and Theoretical Chemistry. This is the highest honour that Cambridge bestows on a chemist.