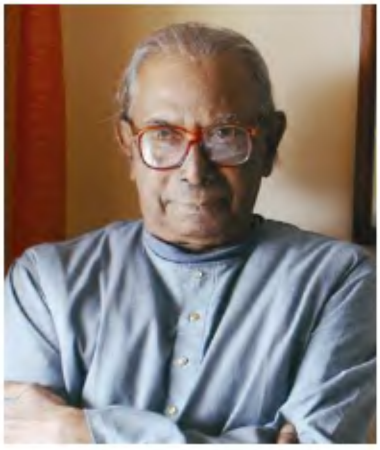
S. K. Ghosh (1932–2008)

Prof. S. K. Ghosh, founder of modern structural geology in India passed away on 30 October 2008 at the age of 76. Ghosh played an instrumental role in propelling structural geology in new directions. Before the sixties, the subject was descriptive in nature, backed mainly by field observations. He ventured in introducing the concepts of theory and experiments, and showed how it is possible to study rock deformation processes with a quantitative approach. This unique contribution placed him among the few top-level geo-scientists in the world.

Ghosh was one of the finest academicians I have ever seen, with a good balance between teaching and research. An essential element of education in the university system involves teaching with a flavour of research, which enables students to grow with new, independent ideas. Ghosh beautifully blended the shade of research with his teaching materials, even for undergraduate students. He always used to refresh his course in structural geology by bringing in materials from the research frontiers. This mode of his teaching could stimulate students for pursuing research right at the undergraduate level. He wrote a textbook on modern structural geology which reflects his original academic acumen, that always aimed at combining teaching and research in the higher studies. He had a great passion for learning 'science learning through experiments' which he infused in his students as well. Ghosh was the first geo-scientist who developed a laboratory for experimental structural geology in our country. Without depending on outside resources he himself designed and fabricated the laboratory, which was suited to perform experiments with materials available in India.

Ghosh was also interested in literature and art. He enjoyed reading French literature and used to visit museums and collect books on paintings by the greater masters. Ghosh himself used to paint during his leisure time. This skill enabled him to make elegant sketches of field structures on field notebooks, which are scientifically as well as aesthetically wonderful.

Ghosh made fundamental contributions in theoretical and experimental structural geology. He held a long research career that traces back to the early sixties. Ghosh never took retirement from active work till the end. In the early stage of his career he worked in a number of tectonic belts, such as the Singhbhum and the Rajasthan mobile belts. His field investigation resolved some crucial problems in structural interpretations, like syntectonic emplacement of Kuilapal pluton in



Singhbhum. During 1966, his research turned to a new direction, keeping track with the revolutionary change in geoscience that happened in the early sixties. Ghosh visited Prof. Hans Ramberg's laboratory in Upsala University, Sweden, where he did pioneering experimental studies on a variety of problems dealing with folds produced by buckling processes in layered rocks. These experimental studies triggered a new idea towards interpretations of folding in shear deformations. In naturally deformed rocks we find a wide variation of fold shapes. For the first time, Ghosh demonstrated from buckling experiments the mechanics of folds with sharp and smooth curvatures, considering factors like inter-layer gliding properties and the nature of confinement of multilayers. This research work developed a bridge for experimental structural geologists of later generations.

Ghosh had a special fascination for working on interfering fold waves. Earlier geologists used to interpret the interfering fold patterns using kinematic models. However, Ghosh and Ramberg explained contrasting interfering fold patterns by applying the mechanics of superposed buckling in layers. The patterns were elegantly demonstrated in laboratory test models. He later advanced this study with his students in Jadavpur University. During his second visit to Ramberg's laboratory during the early seventies, Ghosh carried out research work in a new field concerning the deformation and kinematics of rigid or stiff inclusions floating in a continuous matrix. This resulted in a series of research papers which built the foundation of this subject. A paper by Ghosh and Ramberg that appeared in *Tectonophysics* in 1976 has turned to be classic. In this study they have given a detailed account for rotation of single elongate inclusions in a flowing viscous matrix. Ghosh had a mind for theorizing phenomena he noticed either in field or experimental models. For example, he developed a theoretical analysis for the rotation rates of strain ellipse and a passive surface in non-coaxial deformations, and explained why foliation along slip occurs in schistose rocks observed in Ghatsila and elsewhere. In India, Ghosh in collaboration with Sudipta Sengupta, worked on a wide range of topics, like deformation of inclusions, shear zone kinematics, superposed folding and boudinage structures.

Ghosh has guided a large number of Ph D students including the present author. Ghosh is survived by his wife and son. Ghosh's work will keep his name alive in the field of structural geology for a long time.

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