Dr. K. J. Hsü

CMG Chairman

One of the more colourful and plain-speaking geoscientists of today, Professor K.J. Hsü, Chairman of the IUGS Commission on Geology, is well known for his research on a wide range of geological topics. His career has spanned the continents and the oceans, and his interests have varied just as widely, from mylonites and turbidites to mass extinctions and social Darwinism.

Ken Hsü was born in China and began his career in geology at the urging of his father, an engineer-politician who mistakenly thought his son had enjoyed their earlier walking excursions together. Following his B.Sc. studies at the Chinese National University in Nanking, the young Hsü - the name is a "germanized Welsh mistake in phonetization" - obtained a scholarship to study abroad. In 1948 he went to Ohio State University, still hoping for an opportunity to switch to physics, his main interest. It was not until he went in 1950 to the University of California in Los Angeles that the intellectual challenge of geology - and the camaraderie among geologists - confirmed his interest in geology.

Dave Griggs at UCLA was the most influential person in his student days. "He was exact, often to the point of being unkind, but he taught me clarity in thinking and in expression. Cordell Durrell and Louella Saul of UCLA, on the other hand, impressed me with kindness and their philosophy that success is not everything in life. I expect precision from my students, but I seldom am unkind, intolerant as I am of sloppy thinking.

"My shifts in interests have been conditioned by 'fate'. As a young student I preferred to work with quantitative relations in geology. After I found Griggs, I realized that I was not very good with my hands. Instead of experimental geology, I did a thesis in Precambrian rocks. But I had to work with young sediments because a job with Shell was all that I could find." A chance for a promotion then led Dr. Hsü into geochemistry, to a study of the solubility of dolomite at high temperatures and pressures.

Prof. Hsü first became involved in Alpine geology when he went in the mid-1950s to Switzerland to court his first wife, Ruth, who was later killed in a car accident. "In my memory of her, I vowed to bring up her children in Switzerland. Rudy Trümpy offered me a job at the famed ETH in Zurich and I took it.

"There are definitely advantages to working in Switzerland. Ours is a small, neutral country, and we are 'in demand' by international organizations. We have thus a better chance to meet international science leaders and such contacts often help our work." ETH is well-supported financially and "an extraordinary place to do productive research." Working with Hsü in the experimental geology and limnogeology group are five or six scientists, 18 Ph.D. students, plus technical support staff and all the modern equipment he wants.

Prof. Hsü began work on over-thrusting in 1967 as part of a new ETH program on rock mechanics under his supervision. At the same time he continued his search for experimental approaches to dolomitization, testing some of his ideas in Abu Dhabi in the early 1970s.

His involvement with deep-sea drilling was by chance, when he joined the *GLOMAR Challenger* in late 1968 as a last-minute replacement. As a result, Prof. Hsü made a proposal to drill in the Mediterranean, aimed at understanding Alpine-Mediterranean tectonics. The discovery that resulted in 1970 of unexpected volumes here of Miocene evaporites led to the startling hypothesis that they were formed by the dessiccation of pre-existing deep basins, cut-off from the open sea but still far below sea level. Prof. Hsü's book describing this work, *The Mediterranean was a Desert*, is a widely acclaimed account of the development of a major scientific concept, the Messinian salinity crisis and its sudden ending.

Ken Hsü's many years of deep-sea studies have turned him into a paleoceanographer and isotope geochemist. Again by chance, he was the co-chief scientist on a cruise just after the bolide-impact hypothesis became fashionable, and he convinced DSDP to drill an unscheduled hole in the Cape Basin, where some very critical data were obtained on oxygen and carbon isotope anomalies in ocean sediments across the K-T boundary.

It is not surprising that Prof. Hsü's work on the K-T boundary and the Messinian salinity crisis have led him to re-examine uniformitarianist principles. In recent years he has also turned a critical eye to the work of Charles Darwin and has recently published a book, *The Great Dying*, partly as a protest against social Darwinism. His views recently expressed in a fascinating correspondence in *Geology* are characteristically pungent.

Prof. Hsü says that "like many others, I always thought *The Origin of Species* was the great scientific work of a genius, but I realized after studying it that it was more ideology than science. The idea of common descent had been discovered long before Darwin; his contribution to the theory of evolution was his postulated mechanism of 'natural selection, or the preservation of the favoured races in the struggle for life'." Prof. Hsü views the subtitle to that masterpiece as revealing of Darwin's social attitudes.

"Darwin," he says, "believed that the social philosophy of 'survival of the fittest', of 'might is right', could be the explanation of the historical fact of evolution. New species evolved because they were the 'favoured races' which 'exterminated their nearest relatives'. Not having read his book, many become convinced Darwinists, without realizing the fact that there is not a bit of historical (fossil) evidence for the conclusion that extinction means extermination of lower races."

Prof. Hsü regards Darwinism as "persuasive because it satisfies the basest instinct of man, the instinct to prevail, to dominate. Rupert Riedl, a distinguished evolutionary biologist, wrote recently that Darwinism was seductive, because the Victorian English could see the rights they arrogated to themselves 'legitimized as the law of nature'. The Americans were also oblivious with joy; Rockefeller could say that 'the growth of business is merely a survival of the fittest; it is merely the working out of a law of nature and a law of God'. Karl Marx thought Darwin's book important because it was the scientific basis for the Marxist theory of class struggle. Darwinism is, of course, popular also in the Third World, where we refused to accept the premise that we belong to the 'inferior races' in our national liberation movements. Prof. Hsü even goes so far as to

Personal Profile

"hold Darwinism indirectly responsible for many of the crimes against humanity and much of the misery of mankind in the 20th century."

Ken Hsü has also been active on a less controversial level, in the work of IUGS. Since 1980 he has chaired the Commission on Marine Geology, which has helped to guide the direction of research in the marine geosciences. At the third CMG workshop in Heidelberg in 1982, "I was pleased to see that most of the recommendations suggested by the 1976 Mauritius report had been implemented. Of course, that was possible because the workshop participants were active leaders in research; they could do what they had recommended (or they recommended what they intended to do). Nevertheless, those workshops did serve to bring individuals together for coordination and collective planning." The next CMG meeting is to be held in Berlin on marine environments and non-living marine resources. "We want to bring scientists of the North and the South together, because those problems concern us all."

CMG members have also helped to organize international cooperative projects such as the Geodynamics Program, the International Lithosphere Program, IGCP, and the Global Change Program. Some have also served as experts in commissions set up by SCOR, SCAR, and the International Maritime Organization, among others. "Our goal is not only the promotion of marine geosciences, we are also concerned with the many problems of our society, to which our expertise can be of help. Our activities are, of course, constrained by time and by budgets; after teaching and research, service to the community ranks third in our priority. Perhaps we have not been able to reach some segments of the marine geosciences community, but we'll try and try harder. I am pleased, therefore, to see that the *Episodes* is helping us to bridge the communication gap with this interview. We are here, and we would like to hear from you what more should we be doing."

Looking back, Prof. Hsü sees "a continued evolution in my interests. There were linkages, yet the evolution was not slow and gradual but a 'punctuated equilibrium'. All major leaps and bounds were coincidental, in a destiny guided by fate." As he said in accepting the Wollaston Medal in 1984 from the Geological Society of London, "Geology has enriched my life, and I have found meaning in studying geology. If I had been a physicist, I might have been swept along in a competition to seek vanity. As a geologist, I could remain true to my Taoist leaning and deny the social Darwinism of natural selection, of struggle for existence or survival of the fittest."

PERSONAL NOTES

Awards

- From the Geological Society of America in 1986 to: **Laurence L. Sloss** (U.S.A.) the Penrose Medal for major original contributions to the regional and physical approaches to stratigraphy.
E-an Zen (U.S.A.) the Arthur L. Day Medal for his outstanding contributions to geology through the application of physics and chemistry.
- From the Deutsche Geologische Gesellschaft (F.R.G.) to: **Eugen Seibold** (F.R.G. and Past President of IUGS) the 1986 Stille Medal for his fundamental work in marine geology.
- From the U.S. National Academy of Sciences for 1987 to: **Harmon Craig** (Scripps Institution of Oceanography) the

Arthur L. Day Prize for "masterful use" of isotopes in cosmochemistry, mantle geochemistry, oceanography, and climatology.

Andrew H. Knoll (Harvard University) and **Simon Conway Morris** (University of Cambridge) the C.D. Walcott Medal for their research on Precambrian and Cambrian paleontology.

G.W. Lugmair (Scripps Institution of Oceanography) the George P. Merrill Award for "developing the samarium-neodymium method of age determination."

R.A. Berner (Yale University), **W.M. Kaula** (U.C.L.A.) and **D. Fred Wendorf** (Southern Methodist University) election as Members, and to **Mary D. Leakey** (National Museums of Kenya) and **P.V. Tobias** (University of the Witwatersrand) election as Foreign Associates.

- From the Geological Society of India for 1987 to: **Manfred Schidlowski** (Max Planck Institute for Chemistry, F.R.G.) an Honorary Fellowship of the Society for his work on "early organic evolution and environmental involvement."

From the American Geophysical Union for 1987 to:

William F. Brace (Massachusetts Institute of Technology) the Walter H. Bucher Medal for original contributions to the basic knowledge of the Earth's crust.

Robert N. Clayton (University of Chicago) the William Bowie Medal for his use of stable isotopes to study the chemical history of the Earth, Moon and meteorites.

Julian R. Goldsmith (University of Chicago) the Harry H. Hess Medal for his research on the "constitution and evolution of the Earth and sister planets."

William M. Kaula (University of California at Los Angeles) the Charles A. Whitten Medal for "outstanding achievement in research on the form and dynamics of the Earth and planets."

W. Jason Morgan (Princeton University) the Maurice Ewing Medal for significant original contributions to understanding physical, geophysical and geological processes in the ocean.

From the Geological Society of London for 1987 to:

- Claude J. Allegre** (University of Paris) the Wollaston Medal for his "first rate work in isotope and trace element geochemistry" and for his "close involvement in the organization of earth sciences in France and Europe."

Charles D. Curtis (University of Sheffield) the Murchison Medal for "geochemical and microscopical studies of minerals and rocks, their applications to lithification, weathering and genesis, coupled with studies of fluid rock interaction and fluid evolution."

Nicholas J. Shackleton (University of Cambridge) the Lyell Medal for his "fundamental work on oxygen and carbon isotope stratigraphy" and its application to the Quaternary.

Richard L. Stanton (University of New England, New South Wales) the William Smith Medal for his work on the "mineralisation of orebodies, particularly in relation to massive sulphides."

IN MEMORIAM

Jean Goguel (January 1987), former Director of the French Service central de la Carte géologique. An exceptionally prolific scientist, he was known world-wide for his many textbooks on such diverse topics as tectonics, geothermics, environmental geology, geophysics and engineering geology.

Philip B. King (April 25, 1987) one of the pre-eminent scientists in the history of the U.S. Geological Survey, perhaps best known for his definitive maps and monographs on the geology of North America. He was the recipient in 1965 of both the Penrose Medal of the Geological Society of America and the Lomonosov Medal, the highest equivalent honour bestowed by the Soviet Union.